INTERNATIONAL CONFERENCE ON
BEST INNOVATIVE TEACHING STRATEGIES

29-31 JULY 2021

Organized by Teaching Learning Centre
BITS Pilani - Pilani Campus

Innovative Pedagogical Practices
Innovative Technology for Effective Learning
Education Policy and Administration
Pandemic-driven Educational Research
Education and Industry Linkages
New Technologies and Education
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MESSAGE FROM THE VICE CHANCELLOR, BITS PILANI

Dear Conference Delegates,

Heartiest welcome to the International Conference on Best Innovative Teaching Strategies (ICON-BITS 2021) being organized by Teaching Learning Centre, BITS Pilani, Pilani Campus. We at BITS Pilani cherish quality teaching and explore further direction in innovation and research to keep itself abreast of the latest developments in science, technology, research and academic innovations. In consonance with this, research in pedagogical practices and development and effective use of Edu-Tech continue to bring frontiers of research findings into the classroom for better learner engagement and outcomes here at BITS.

For the last several decades now, an interdisciplinary approach has remained deeply embedded in the academic and research culture at BITS. This has helped us build a synergy between variegated fields such as academia, corporate, entrepreneurship, civil services, and social arena, literature and defense services. BITS Pilani always strives excellence from the inception. It has created a world-class curriculum for UG and PG programmes with emphasis on developing analytical skills along with hands-on laboratory exposure and industry exposures through unique Practice School programme.

The last two years however, have confronted not just BITS, but the entire academic fraternity the world over, with an unprecedented challenge. The raging Coronavirus pandemic, ensuing lockdowns and restrictions have forced all of us to revisit and revamp our academic strategy so that we continue to impart quality education to the young and talented population of our country and help them translate their dreams into reality despite the widespread environment of uncertainty and apprehension.

Envisaged at such critical times, I am delighted that the Teaching Learning Center of BITS Pilani has come up with the idea of offering a treasured platform to researchers, academicians, industry members, and our distinguished alumni who are actively engaged in the field of education to exchange and share their experiences, research results, innovative ideas and discuss the practical challenges encountered and the solutions that can successfully negotiate them.

It is an honour for BITS Pilani that the internationally acclaimed experts and researchers from the University of North Texas, National Taiwan University, Carnegie Mellon University, Texas A&M University and University of Oklahoma have agreed to deliver Keynote addresses and researchers and practitioners from 11 different countries and from 60 different state and central universities, IITs, NITs, and IIMs from India will be engaging in academic deliberations and exchange their ideas at this conference. I hope during these three days, this conference leaves all of you with a renewed spirit and provides you enough opportunities to engage with your peers to discuss your ideas for research and collaborate for future projects.

I congratulate the Teaching Learning Centre, BITS Pilani, Pilani Campus on taking this initiative and organizing this conference and wish this conference a grand success.

PROF. RANENDRA N. SAHA
ACTING VICE CHANCELLOR
MESSAGE FROM THE DIRECTOR, BITS PILANI- PILANI CAMPUS

It gives me immense pleasure and pride that the Teaching Learning Centre, BITS Pilani, Pilani campus, is organizing the inaugural edition of International Conference on Best Innovative Teaching Strategies (ICON-BITS 2021) from 29 to 31 July, 2021 in the online mode.

It has become commonplace to acknowledge that the COVID-19 Pandemic has altered the way we think about the teaching learning process. As educators and researchers, it is our responsibility to reflect on the changes that are still underway with an aim to actively intervene in the present moment and shape the future. I believe that the Teaching Learning Centre at Pilani campus has taken a very timely step in this regard by organizing a conference that provides a forum for various stakeholders to reflect and deliberate on the variegated nuances of teaching learning.

The thrust areas of the conference cater to different aspects of teaching learning such as pedagogy, use of technology, the role of education policy, and the link between educational institutions and the industrial requirements. I am delighted to see a galaxy of our international guests: Prof. Kinshuk (University of North Texas), Prof. Nian-Shing Chen (National Yunlin University of Science and Technology), Prof. Chun-Yen Chang (National Taiwan Normal University), Prof. M. Cynthia Hipwell (Texas A&M University), Prof. Kim J. Hyatt (Carnegie Mellon University), Prof. Farrokh Mistree (University of Oklahoma), and Prof. Janet Allen (University of Oklahoma), would be enriching our delegates with their erudite keynote addresses.

I believe that the keynote addresses, the presentations and the panel discussion will lead all of us informed, enriched and enlightened during the conference. This abstract booklet as well as the conference proceedings which are being brought out by the organizers, will be a valuable resource for educators, researchers and policymakers.

I welcome you all to this international conference and also congratulate the Teaching Learning Centre for taking this initiative. I hope that this edition is only the beginning and this will be taken forward in the coming years.

I wish the ICON-BITS 2021 all the success!

PROF. SUDHIRKUMAR BARAI
DIRECTOR
BITS PILANI- PILANI CAMPUS
MESSAGE FROM CONFERENCE CHAIRS

It is my pleasure to welcome you to the International Conference on Best Innovative Teaching Strategies (ICON-BITS 2021). I would like to express my gratitude to all the researchers, academicians, industry members, our distinguished alumni and our sponsors for their continued support. To create and uphold excellence in teaching at BITS Pilani, a Teaching Learning Centre was established across the institute, in all four campuses in 2015. The Teaching-Learning Centre promotes sharing of teaching-learning experience, encourages innovation in teaching-learning methodologies, and creates a platform for learning from the best practitioners and each other. It also conducts pedagogical research and actively seeks strategies/interventions in specific target contexts. TLC organizes workshops to train academicians in the use of the latest technology and develop various approaches and techniques for effective teaching and learning. It also creates a platform to address the various pedagogical challenges by conducting national/international conferences, lecture series, workshops, and training programs for academicians and scholars.

Although we are online this year, we are committed to creating spaces for connecting with colleagues from across disciplines and pedagogues and researchers across the globe. The ICON-BITS 2021 will consist of world-class keynote addresses, industry-led presentations, as well as extensive networking opportunities. The aim of the conference is to provide an opportunity for academicians and professionals from various educational fields with cross-disciplinary interests to bridge the knowledge gap, promote research and learn the best pedagogical practices from internationally renowned experts. We have received an overwhelming response to our Conference Call for Paper. We received 176 submissions out of which 101 papers have been accepted for presentation. There will be 8 Invited Plenary Session with 9 Keynote speeches, 1 panel discussions and 2 Edu industry sessions during these three days. You can look forward to rich and interesting discussions from different points of view on the chosen themes. The live sessions are designed to be interactive experiences with opportunities for you to find community through breakout group activities, chat comments, and shared documents.

Our conference program is being updated regularly. Please be sure to visit out conference webpage for more details.

Hope these three days’ deliberations and discussions will etch very fond memories and meaningful learnings.

Welcome to ICON-BITS 2021!

PROF. PUSHP LATA
FACULTY IN CHARGE
TEACHING LEARNING CENTRE
On behalf of the entire organizing committee, I welcome you all to the inaugural International Conference on Best Innovative Teaching Strategies (ICON-BITS 2021). It is indeed a great pleasure to witness your high level of enthusiasm, which has been the key to making this conference successful.

We sincerely believe that this inaugural conference, organized by the Teaching Learning Centre of BITS Pilani (Pilani Campus), has not only provided all of us with a much needed platform to exchange our ideas for a better teaching and learning environment, but also highlighted the prevailing keenness of the teaching community to work cohesively, especially during this time of the pandemic.

We are indebted to our invited speakers- stalwarts in their fields- for kindly agreeing to share their insights with all of us during the conference. The advisory committee- comprising of veteran academicians and administrators from India and abroad- have always extended their helping hand to guide us toward successful organization of the conference. The active participation of registered authors, attendees and reviewers coming from various institutes of repute around the world has ensured that the conference is truly international in nature. We thank you for being a part of this team and for being our companion as we start this new journey.

After being conceptualised almost a year ago, the ICON-BITS 2021 team has worked diligently with support and guidance from the leadership team of the institute to ensure that the conference is organized without any hassles, irrespective of the pandemic situation. Therefore, this inaugural version of the conference is being hosted online. However, we look forward to welcoming all of you and your peers physically in the future editions of the conference.

We have carefully selected only the papers aligned with the theme of the conference. We expect all these papers to be of interest to the academicians and researchers. This book of abstracts bears testimony to the scholarly work carried out by the participants of ICON-BITS 2021. We are sure that anyone reading these abstracts will be interested to know more about the papers. Hence, we have partnered with Macmillan to publish the articles in both hard and soft copy. The articles will also be available perpetually in the online platform of Social Science Research Network (SSRN)- a subsidiary of Elsevier. We will make sincere efforts to publish an edited book based on the papers from this conference and will like to facilitate our authors to take their papers to a higher level so that the papers can be published in reputed journals.

We hope that our association with you will continue to be stronger in the coming years. Let us be enlightened with our collective knowledge during the three days of this conference and in future!

DR. NIRANKUSH DUTTA
CONFERENCE CHAIR
ASSISTANT PROFESSOR, DEPARTMENT OF MANAGEMENT
BITS PILANI (PILANI CAMPUS)
CONFERENCE CONVENERS

Dr. Krishna Etika
Dr. Muhammed Afzal P
Dr. Tamali Bhattacharyya
Dr. Meetha V. Shenoy

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Dr. Prashant Uday Manohar
Dr. Shibani Khanra Jha
Dr. Gautam Singhvi
Dr. Ashutosh Bhatia

SCHOLAR VOLUNTEERS

Ms. Chandni Runiyar
Ms. Kirti Singh
Ms. Neha Sharma
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Chair, Department of Natural Sciences and Professor of Biology & Biochemistry, University of Houston-Downtown

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Director of the Center for Educational Technologies, Texas A&M University

Prof. Rahul Telang  
Professor, Information Systems and Management, Carnegie Mellon University

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Dean, Alumni Relations, Birla Institute of Technology & Science, Pilani

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Director, National Institute of Technology, Durgapur
Prof. Debjani Chakraborty  
Associate Dean, Outreach(CE&T/IOE),  
IIT Kharagpur

Prof. Bani Bhattacharya  
Associate Professor, Centre for Educational Technology,  
IIT Kharagpur

Prof. S.K. Verma  
Dean, Administration and Professor, Biological Sciences,  
Birla Institute of Technology & Science, Pilani

INVITED SPEAKERS

CHIEF GUEST

Prof. Anil K. Bhowmick  
University of Houston, USA  
Former Director, IIT Patna

GUEST OF HONOUR

Prof. Pankaj Jalote  
Founding Director  
Indraprastha Institute of Information Technology, Delhi
KEYNOTE SPEAKERS

Prof. Amitava Mitra  
Executive Director  
MIT, USA

Prof. Kinshuk  
University of North Texas

Prof. Nian-Shing Chen  
National Yunlin University of Science and Technology

Prof. Chun-Yen Chang  
National Taiwan Normal University

Prof. M. Cynthia Hipwell  
Texas A&M University

Prof. Janet K. Allen  
University of Oklahoma

Prof. Farrokh Mistree  
University of Oklahoma

Prof. Kim J. Hyatt  
Carnegie Mellon University.

Dr. Vinnie Jauhari  
Microsoft Corporation India Ltd.

VALEDICTORY CHIEF GUEST

Mr. Venkataramanan Sriraman  
Executive Director, eVidyaloka
INNOVATIVE PEDAGOGICAL PRACTICES
Design Education for First Year University Undergraduates

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Technology-driven active learning pedagogy strategies are currently adopted by various educational institutions to ignite student’s passion for authentic and life-long learning. For an effective learning process, it is essential for students to grasp the fundamental concepts taught in the class and subsequently apply it to real life scenarios. At the Singapore University of Technology and Design (SUTD), design education forms an integral part of the university curriculum and is incorporated in almost all the courses over the years. From the first year itself, students are introduced to design thinking in different modules at SUTD through hands-on activities, case studies and group projects. Some of these projects are developed by the faculty using an interdisciplinary approach to enable students make connections across the various Science and non-Science subjects that are offered within a teaching term. This paper will present student’s learning experience of immersing in various design-centric learning exercises cutting across single as well as multiple disciplines in their first year at SUTD. Rubrics used to evaluate such design-based learning activities will be discussed in the paper as well. The purpose of this paper is to share how design thinking concepts are integrated using a team-based approach into selected courses for Year 1 undergraduates at SUTD. Such active learning pedagogical techniques are expected to allow our students to apply concepts learnt in the classroom to real life situations thereby enhancing their critical thinking skills.

Personality and Social Behaviour as Influencers of Happiness in Students of Higher Educational Institutions: An Exploratory Study

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In present study an attempt has been made to evaluate the happiness level of students from Higher Educational Institutions and to identify, if the components of students’ personality and their social behaviour precede their happiness. The study aims to expand the domain towards students’ well-being which ultimately leads to their academic achievement impacting reputation of Institutions. The study consisted a sample of 251 graduate and post graduate students. The data was collected with the help of structured questionnaire using survey method. The quantitative analysis applied was structural equation modelling. The study was concluded with the findings that extroversion and social behaviour positively affect happiness but at the same time introversion was also found to be positively affecting happiness. The present study provides scope for future research in the area of design of curriculum where factors effecting happiness are also taken care of, based on which ‘Happiness Model’ can be created for the students of higher educational institutions. The implication of the study is for educational institutions, corporates and organizations as today’s happy students will be tomorrow’s happy employees, who will create happy workplace leading to better productivity.
Demo Based Learning an Effective Teaching Learning Pedagogy in STEM Education

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Teaching any topic with the help of a figure is worth a thousand words, and with a demonstration is worth a thousand figures. STEM (Science, Technology, Engineering, & Mathematics) education involves understanding concepts/processes which have complex dynamics, speed, procedures, transformations etc. Such topics are difficult to visualize through just text or static figures. So there is a need to develop appropriate teaching methodology for better learning of such concepts. This paper presents demo based learning as an effective teaching learning pedagogy in STEM education. Demo based learning involves demonstrations of various theoretical processes/procedures/skills using animated video clips, simulation software and actual demo of prototypes/instruments. Demonstration can reveal processes that are too fast for students to understand, or too small to see. This paper explores the different ways of demo based learning in Instrumentation and Control Engineering. The demo based learning was conducted in the class. The feedback of the students was taken to test the efficacy of the method used. It shows that this type of learning stimulates the interest of the students and promotes their engagement. It is found that the students could do their assignments with confidence. This method of teaching has a lifetime learning impact which helps students to easily incorporate the theory concepts in real time applications.

Transforming Traditional Indian English Teaching Classroom into Skill-based Teaching

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Teaching the English language as a subject and teaching the English language as a skill are two different concepts. English Language Teaching in Indian schools is mostly focused on teaching English as a subject, not enough to develop communication skills in English. Education is useful only when it is functional for the students in their life outside the school. After learning the English language for many years, students do not have enough skills and confidence to use the English language skills in real-life situations. Language teachers need to shift their approach to Communicative Language Approach (CLT) to bridge this gap where students are involved in many real-life situations and communicate in English. This is the same way how children acquire proficiency in their mother tongue. There is a need for a paradigm shift from traditional teaching to skill-based teaching or competency-based teaching. This paper highlights the importance of redefining the objectives and suggests the way of doing it to make the teaching-learning process focused on the English language as a skill. It makes teachers as well as students more clear about what the students actually do with the language rather than what they can recall.
Global Virtual Exchange as Sustainable Higher Education Practice: Developing Innovative Teaching and Learning Strategies Using Online Collaboration Among Four International Universities

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Abstract: In the international higher education context, there have been several challenges as well as opportunities arising due to the ongoing Covid-19 pandemic. The Covid crisis has adversely impacted almost all the walks of academic life, and the international academia also suffered due to the entire teaching learning system coming under pressure. Since then, some path breaking international collaborations have been started for developing sustainable teaching and learning practices using online resources. This paper presents one such innovative collaboration by the ILDP programme of the Hiroshima University, Japan and the Global Virtual Exchange initiative by the University of Texas at Austin, USA along with the BITS Pilani, Pilani Campus and the Tribhuvan University of Nepal. The insights discussed in this paper are directly drawn from my experiences as a lead professor in the ongoing international collaboration for promoting high quality research and academic work across the four universities mentioned above. A total of 28 students (Post-graduate level), 5 TAs and a group of 6 professors, along with several external resource persons have collaborated in delivering and co-creating content on selected themes around Agriculture and Climate Change adaptations by small farm families across all the 4 countries. In this original research paper, I would be highlighting the teaching and learning practices that were used by the international team for enhancing the efficacy and effectiveness of such global level virtual collaborations as well as for promoting their sustainable practice in the foreseeable future.

Active Learning in Higher Education by SOLO Taxonomy

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The objective of the study is to use the structure of observed learning outcomes (SOLO) taxonomy, a significant tool used in differentiating curriculum and providing cognitive challenges to the learners, to motivate students for active classroom learning in engineering subjects. Normal- and SOLO taxonomy structure modes are alternately and exclusively used for preparing question papers of four class tests in an undergraduate materials science and engineering course. The performances of one hundred students on those tests are compared. Additionally, a separate feedback survey is conducted to understand the students’ satisfaction and learning. Performance-wise students are observed to learn better using SOLO taxonomy. The feedback indicates that this taxonomy promotes, engage, and enhances the cognizance quality of the students and orients them to accept the learning challenges.
Mapping Pedagogical Tools to Cognitive Processes for Effective Learning Design for Post-Millennials

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Post-Millennial generation of students who form a sizeable portion in higher education, expect the learning environment to be different from their earlier generations. This necessitates a paradigm shift in higher education from a teacher-centric environment to a learner-centered or learner-controlled environment. It is important to identify pedagogical tools and methods to keep this generation of students engaged. The main purpose of this study was to identify the best teaching-learning pedagogy to create an active learning experience for the post-millenials students in higher education. This study is based on the theoretical framework of “Revised Blooms Taxonomy” (2001). This study has been conducted at a university which has its own ‘Teaching Learning Center’ (TLC) and for its pioneering efforts in teaching, it was one of the first universities to be awarded the ‘Institute of Eminence’ by the Government of India. An intense focus group discussion of highly rated faculty members (rated by students and their peers) across various disciplines was conducted to find out various pedagogic tools that enhance the learning experiences of post-millenials. The outcome of this research resulted in detailed mind maps of various pedagogic tools used and recommended for all the cognitive processes in the revised Bloom’s taxonomy framework viz. Remembering, Understanding, Applying, Analyzing, Evaluating and Creating. The overarching conclusions are that, though technology has become inevitable; over-dependence on technology cannot be a replacement for teaching. Team-based/ group learning, peer learning, customized teaching and providing timely feedback continue to be a prerequisite for effective learning.

Adapting the New Normal Modes of Education in the Pandemic Driven World and Analysing its Ramification on the Overall Teaching-Learning Practice

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The current threat of the COVID 19 pandemic has compelled the existing teaching-learning model, especially classroom teaching undergo a paradigm shift overnight. For the last one year, education is running solely through online mode. The complete closure of physical mode of education brought a lot of difficulties to students as they had to rely on online resources. Online teaching and learning process involves a certain pedagogical content knowledge (PCK), in order to design and organise a better learning experiences with the help of various digital technologies. The introduction of ed-tech has emerged as a saviour for this tough time. Educational institutes are using various online platforms abundantly. These platforms were completely unknown to students and teachers as well; therefore, adaptation and negotiation have been going on from both ends since its inception. Platforms like Google Meet, Zoom, Microsoft Team, GotoWebinar have been used for accommodating a large number of students with the objective of providing education in the best way possible. The authorities of most of the institutes invested in subscribing these softwares and other ICT tools to keep the students motivated in the time of anxiety and unprecedented shift in the education system. Therefore, The objective of this research work is to investigate and analyse the challenges that students of both schools and colleges are facing in order to mitigate the newly introduced educational models, the sudden changes that the teachers had to adapt in order to keep the educational practice on going and the reception of this prolonged online teaching amongst students of various age groups. As new pedagogical models have been implemented in order to carry forward the educational process; it has become a prerogative for researchers to find out how effective have they been for students with lower IQ level and students who are not adept at using these tools.
Unmuting the Mute: Turning Challenges into Opportunities

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Language classes whether they are face to face or virtual should be more engaging, interactive and motivating for our learners. But in a class either the outspoken or active learners participate more. To involve ALL students to participate actively in the class, lessons should be interspersed with various multi-sensory activities where the learners communicate in a non-judgemental and non-threatening environment in the classroom. For more than a year during pandemic time teachers have been facing a lot of challenges to reach them through online mode and have been motivating the learners to fight with pandemic and have been helping them to bridge the learning gaps that it has created. This paper will talk about how by moving outside the established curriculum, a teacher can give her students enough freedom to express themselves through different carefully crafted tasks and facilitate the acquisition of language learning skills through online mode. During the outbreak of the coronavirus, the lock down period and in subsequent months when all life had come to a standstill the investigators found in an effort to lift the sagging spirit and channelize the energy of her learners in meaningful pursuit of language learning introduced some novel language learning activities to enhance their language skills in online classes. The activities selected were: Write&improve.com, Plotagon, building vocabulary through YouTube videos, Mini-sagas Ted talks, e-book reading etc. Students were provided online platforms to present, as the main aim was to make learning a fun experience for everyone with hands-on activities. The students were 110 in numbers and they were spread into three groups of 40+40+30 each. All the activities introduced were beyond their textbooks lessons. All the practises were carried out in the online mode of teaching for six long months. Their written pieces were published in the form of E magazine and they took part in various online competitions. Their improved performance in the form of their written pieces and their presentations in online classes prove that learning becomes more interesting, exciting and rewarding by straying away from prescribed curriculum and with the teacher playing the role of a facilitator and co-learner in true sense of the word.

Impact of Innovative Teaching Strategies

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Teaching is an accredit vocation and a profession which is vital for every leaner. Teacher is the person who requires skills as well as knowledge on the area of teaching. There are lot of innovative methods and strategies are implemented to teach in best possible way. Leaners has various modes and options to learn new things in this modern world with various platforms. These developments and new innovations are used by the teachers in productive manner. Every teacher would like to know whether their teaching is satisfied and effective.
Cross-Disciplinary Teaching Approach on Transformational Learning for Multidisciplinary Education

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The need for cross-disciplinary teaching for multidisciplinary education has become more prevalent in the 21st century learning. Through the teaching of the various themes spread across the disciplines/subjects, learners can make connection in diverse classrooms and develop the ability to integrate knowledge and curriculum creatively. The authors aimed to integrate knowledge into the teaching and foster transformational learning experience as the pre-service teachers engage in cross-disciplinary theme teaching for the successful implementation of cross-curricular teaching approach. The purpose of this study was to find the effect of Cross-disciplinary Teaching Training Modules based on Beckman's Model of Cross-curricular teaching on transformational learning. This experimental study used pre-test post-test control group design. A sample of 64 Pre-service Teachers chosen randomly formed the sample of the study. The experimental treatment included the Training Modules with essentials on lesson plan development on Cross-Disciplinary Theme teaching in 3 phases for Preservice Teachers at Secondary School Level developed by the investigators. A Standardized scale on "TRansformative Outcomes and PrOcesses Scale (TROPOS) by Robert Charles Cox (2017) was adapted for data collection. This instrument (30 items) was divided into four, modular subscales: Socia Support, attitude toward uncertainty, criticality and transformative outcomes. Results indicated that the Pre-service Teachers exposed to Cross-Disciplinary Teaching Training Modules exhibited significantly better transformational learning experiences than the pre service teachers exposed to traditional discipline-based teaching. The study has implications for pre-service and in service teacher education at all levels for effective Multidisciplinary 21st century education, in which learners integrate knowledge and modified their worldviews or perspectives as they engaged in cross-disciplinary teaching approach.

Social Contributory Micro-Learning Activities Motivate Learners to Pursue Higher Order Learning Outcomes

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The ubiquitous availability of a smart phone device and technology enhanced learning, not only aided the teaching fraternity to thrive through the COVID ridden academic year, but also hard pressed one to explore and discover, new avenues of online learning, for enhanced learner engagement. It promoted a certain type of Social Micro-Learning environment, conducive to motivate learners to pursue higher level learning outcomes. In a pre-dominantly practicum based Teacher Education Program (B. Ed), it lead to a successful exploration of a series of contributory micro-learning activities, in the Methodology of Teaching English, thereby encouraging the teacher and the students to become co-learners and co-creators of content. Evolved strategies of contributory learning sought to engage, both the F.Y and S.Y B. Ed learners in social micro learning activities related to higher order cognitive objectives- such as analyzing, evaluating and creating –by utilizing online platforms and social software. Early results of the study confirm the assumption that S.Y B. Ed students, who were rather well equipped with the subsequent content knowledge base, gained deeper insights during the learning process. Though, similar socio micro learning implementation, when duly adapted through appropriate scaffolding techniques, did yield a gradual progression, for F.Y students too, through an upward spiral of competence development. The proposed approach not only improved students learning performance in terms of factual knowledge but also enhanced student motivation in terms of increased learner autonomy, competence, relatedness and learning satisfaction.
Innovations in Pedagogy, Student’s Assessment, Technology – An Approach to Build a Responsible Citizen and a Better Society

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Post COVID19 the online education has evolved as a dominant strategy. Online teaching is submerged into several limitations viz-a-viz the physical classroom teaching. Online education also suffers from the student’s assessment point of view. There are a few advanced technologies have been adopted by the academic fraternity to address the unethical behaviors of the students. A large number of teachers and trainers are innovating by means of technology and assessments strategies. This paper describes the commentary on the views of a set of eminent faculty members engaged in teaching at business programs. An unstructured questionnaire collected the data for the innovations in the online teaching and students learning. The qualitative data collected from the interviews were analyzed using the Nvivo statistical software. A few classified word cloud was generated to gain a clear idea about the frequently emerging keywords. The counting of the words led to the identification of the dominant innovations in pedagogy. The research is expected to enhance the learning and education literature. The key finding of this research is that the technology enabled learning, peer group learning, industry linked learning, project based learning, and self-learning pedagogies are prevalent to ensure effective students learnings. The findings of this research shares the best practices to the academic fraternity for an improved learning environment for the students. The findings of this research can help to the institutions to build advanced technological infrastructure; to the academicians to learn to innovate and adopt learnings from colleagues practicing the teaching and training; to build ethical behavior among the students and engage them in classroom environment.

Challenges and Implications of Developing English Speaking Skills Using Task Based Approach

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This paper aims at tracing the nature of the challenges and their implication for teaching/learning the speaking skills using task based learning approach. The focus remains on the action/activities followed during the classroom interaction. This qualitative study is concept based using synthesis research design. It analyses various arguments and counter arguments weighing task based learning as an enabler of fruitful learning likely to be implemented practically. First all viewpoints are collated, then analysed, and finally carefully perused to get a comprehensive understanding of the notion. The findings indicate that task based learning is more of process oriented than product oriented where the learners becomes the active members but teacher as the facilitator. The approach may be diverse but it is productive when properly put to use. This approach despite the challenges and gaps remains productive and constructive that may help teachers, students, and the learning outcome.
Assessing the Understanding Level of Students for Computer Programming Course Through MATLAB: Case Study of Working Professional Student

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As new digital technologies evolve in various engineering facets, there is a need for an engineer, as a stakeholder to understand and comprehend the backbone of the technologies and the logical framework involved. Programming plays an important role to understand it easily, therefore, the article emphasizes the impact of teaching programming to the engineers and its effectiveness with respect to the learning outcomes. The case study involves working professionals who are students at the largest technical institute which offers work-integrated learning programs in India. The research is carried out for the recently concluded course Computer Programming in their current semester which was taught through MATLAB. It has been observed through a feedback survey that the level of understanding of the logic and the software was increased significantly at the end of the semester.

Content Analysis of Research on Blended Learning in Higher Education in India: Current Progress and Future Directions

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The concept of Blended learning in higher education is becoming mature due to the focus on many of its research topics for a long time. This research is undoubtedly extended to the body of knowledge, yet the numerous definitions of Blended learning in existing literature indicate the lack of consensus on the true meaning of the concept. It is thus to be expected that these discrepancies will constrain further development and use of blended learning in higher education, especially in India. The goal of this paper is to analyse the research articles for the definitions of blended learning, academician’s view towards the pedagogical approach of blended learning, and identify the current understanding of what researchers mean by the concept. The researcher has used an inductive content analysis of 27 research articles published in peer-reviewed journals from scholarly databases for understanding and developing the generic template for blended learning in HEIs. The articles included for the analysis are relevant to blended learning for higher education in India. This study focuses on the current understanding of blended learning in higher education in India, and suggestions to design future studies are proposed based on extant blended learning literature. It is proposed that the findings of this study can serve as foundations of HEIs in India for the development and implementation of blended learning in both academic and research fields.
Employing Collaborative Problem-Based Learning for an Immersive Online Experience in an Undergraduate Bioinformatics Course

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Critical thinking, communication, collaboration, creativity, and problem-solving skills are five essential attributes that ensure that students are well equipped in working under 21st-century challenges across research and practice settings. Despite their importance, only a few Biology Undergraduate courses have implemented these graduate skills fully or partially or tried to change their course structure to evaluate curriculum activities. The current study reports on implementing a hands-on tutorial programme designed to enhance students’ active learning, collaboration, communication, and problem-solving skills of undergraduate biology students. The blending of collaborative and problem-based learning in the hands-on tutorial course was administered two subsequent years to 51(2019-20) and 75 (2020-21) third-year undergraduate students in Bioinformatics. The qualitative feedback of students revealed that students preferred this problem Based hands-on tutorial teaching style over the traditional lecture-based format. Also, the individual-specific problem approach generates interest, engagement, and positive experiences among the students. The assessment of such pedagogical intervention was evaluated by the quality and novelty of the students’ manuscripts or end semester reports and their respective feedback about their perception of this new intervention. The findings also suggest that the development of collaborative, problem-based actively engaged the students in the hands-on sessions, which helped them gain much-needed practical experience by getting exposed to various tools and databases. These hands-on sessions allowed students to acquire the required graduate skills to achieve learning outcomes and complete their end-semester project. The results also revealed that students rated hands-on experiences as coherent and well-structured as it has a rationale that helped them understand the theory better.

A Survey on Issues Faced by Prospective Engineering Students in Contextual Usage

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English holds an indisputable place in the professional world today. The students need to prepare for the world of opportunities that will open up their way with a sound knowledge of English. An insight into the perspective of the students regarding the value of English in academics and professional life is important. This survey is based on the observation and the data collection made by the investigator. A survey among 106 students of Engineering was carried out by the investigators with the objective to understand the current needs in terms of productive skills of learners at the tertiary level. In this survey, the investigator collected the data from the prospective engineering students on the difficulties faced by them and the investigator observed that students are facing problem in their English speaking and writing skills. The major areas of problem cited by the students are lack of confidence in production of English grammar, fluency, vocabulary and pronunciation. The survey also brought to light the significance that the students associated with the English language. Students have adequate theoretical knowledge of grammatical structure but they are not that confident when they have to use the language in their day- to- day life. Analysis of the data collected projected that a majority of the learners need improvement in productive skills. Insisting the significance of feedback on speaking and writing, the survey suggests the need of offering a need- based ELT programme to students of Engineering in order to improve their speaking skills and writing skills.
A Study of Effective Teaching Strategy and Humanistic Approach

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Teaching is a skill that develops and evolves with the experience. It also depends on the social and cultural environment of the target learners as well as the teachers. Each teacher has his own style and strategy of teaching which develops with the interaction among the student and teacher. The mutual understanding of the teacher and student paves the way for the framing of the new strategy in order to facilitate the teaching and learning of the second language. The most important is the complete engagement of the student during the teaching-learning process. The involvement of the student leads to the higher level of motivation that results into the real learning and the development of the competencies. The American psychologist Carl Rogers in the 1980s, laid stress on the facilitative learning. According to him, the facilitative learning is a humanistic approach to learning. This research paper will examine the characteristics of the humanistic approach of teaching and its impact on the teaching and learning of the language. The qualitative descriptive approach of the research explores the various strategies in order to find out the best practice of the learning that is the humanistic approach. The paper reveals that the humanistic approach facilitates the learning and leads to the achievement of the goal by the learners. The students do not feel dominated by the mentor or the teaching strategy and the curriculum. The teacher plays the role of an ignite to develop the motivation among the students to learn through the various innovative practices. Thus, the teacher must adopt the humanistic approach while implementing the various teaching strategies in order to make the teaching-learning more effective.

A Study on Visual Based Testing

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Conventional paper-based testing employed at the graduate level is largely dependent on ‘text’ as the primary communication medium. The ‘question paper’ does allow for the use of schematics, pictures, photos. But their use is curtailed by printing limitations, making text dominant. This mode contributes to the testing process in our universities, being relatively static and lacking a learner-centric focus. The effectiveness of online evaluation can be enhanced by utilizing visual aids. The pandemic has necessitated a paradigm shift to the online mode, but there is much need to adapt testing further—the richness of graphic imaging drives this change. For example, instead of only plain text, online questions can now include colour pictures, animations, video clips, etc. as the testing basis of the questions. The ‘visuals’ do not simply replace the text, but open up new ways of evaluating the aptitude of the test-taker. Similarly, responses can go beyond mere text input, to include the use of various software like text, image, video, and graphics editors, making the process more learner-centric. Such use of visual aids is still largely unexplored in mainstream university assessments, and is a creative way to enhance online testing, especially for engineering courses. In this work, two engineering courses in two consecutive semesters (August 2020 to May 2021), were conducted to include ‘visual type questions’ in the test components, alongside conventional text questions. The efficacy of the visual questions was assessed by student feedback via questionnaires. The main inferences were that the visual questions made the testing more exciting and stimulating. Test integrity was also reportedly higher for such testing when compared to the conventional model.
Modifying the Jigsaw Technique for Teaching Communication Skills in a Technology-Enabled ESL Classroom

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An increased emphasis on cognitive development necessitates a blend of independent learning and social interaction in a heterogeneous classroom. This calls for a cooperative environment based on active participation and shared knowledge, as structured cooperation enhances comprehension and retention vis-à-vis a solely individualistic and a competitive approach. Cooperative learning divides learners into groups to ensure positive interdependence alongside individual accountability. An effective strategy under cooperative learning is E. Aronson’s Jigsaw Technique developed in the 1970s and variously modified as Jigsaw I, II, III, IV, and Reverse Jigsaw. By enabling the creation of an environment premised on consistent interaction of multiple skills (listening, speaking, reading, writing, grammar and vocabulary) and multi-modal (visual, auditory, reading/writing and kinaesthetic) learning, Jigsaw has proved useful for teaching language and communication skills in an ESL (English as a Second Language) classroom. However, existing research on the technique in an ESL context spans its use for teaching language skills in isolation, and are case studies detailing experimental designs that measure its impact on student learning and attitudes. Sufficient research on its use for integrating the various language and communication skills and learning modalities with each other and with technology is missing. This paper will attempt to fill this gap and propose a modified Jigsaw model for teaching these skills. Suggesting activities that effectively utilize this modified Jigsaw model, it will delineate the ESL classroom as a communicative learning space thriving on cooperation.

Attainment of Course Outcome and Program Outcome: Direct and Indirect Method

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An efficient attainment method for evaluation of course outcome (CO) and program outcome (PO) is required for the engineering program accreditation. An efficient method for evaluating student’s performance through direct and indirect assessment tools will be helpful for proper evaluation of CO and PO. Most of the engineering colleges make use of internal assessment tests, assignments and final exam as the direct and indirect assessment tools for evaluating the student’s performance. The tools used for the CO-PO attainment needs to be selected properly to judge the students’ knowledge. This paper gives complete guidelines for calculating the attainment using appropriate selection of direct and indirect method to measure COs and POs. Each CO is defined to address a subset of program outcomes. It is possible to correlate the COs with POs by identifying the strength of mapping with the help of correlation levels 1, 2 or 3: 1: Slight (Low) 2: Moderate (Medium) 03: Substantial (High). The strength of mapping depends upon the assessment tools used for calculating the attainment of course outcome and program outcome. For each course outcome a target level is set in terms of low, medium and high. Based on the evaluation of the attainment, obtained by direct and indirect method the target level is compared and it is one of the measures to indicate the correctness of CO-PO mapping. The attainment obtained using direct and indirect methods along with an example is described with detailed mathematical calculations. The results gives a comparison table indicating target level and the attainment level obtained which enables the teaching faculty to identify the gaps and accordingly take an action to boost the learner’s overall efficiency.
The Effect of Changing Models for Changing Times in Context of Teacher's Continuous Professional Development Programmes in Innovative Pedagogical Practices

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The global pandemic has made relevance in planning clear from aspects of planning for the present times, the future and the changing times. The discussion on Teacher's Continuous Professional Development remains a key factor of policy perspectives for a nation’s socio economic development. The NEP 2020 envisions holistic development of learners through a holistic curriculum to meet 21st Century Education needs UNESCO, SDG 4 "Quality Education", for an Indian context deeply rooted in cultural identity. The earlier Education Commissions University Education Commission 1948, Secondary Education Commission 1952, and Education policies 1968, 1986, POA 1992 have given cognizant to teachers development. In alignment to Educational policies, since 2009, the Faculty Development and Research Centre has been conducting Teachers Training programmes for CBSE affiliated schools. Having trained eighteen thousand teachers approximately through its offline and online modes, this paper discusses the changes in the training models in the wake of the changing needs and its effect in teaching in COVID times. The training models have been based on curriculum model, Values integration, integration of Instructional strategies, Innovative pedagogies and Technology integration. The recent pandemic has brought to document the effect of Teachers training model in alignment to the National Mission on Education through Information and Communication Technology in the basic, medium and advanced ICT integrated models based on the Koehler, M. J., & Mishra, P. (2009) TPACK model and the flipped classroom training models. Teacher’s competency to apply them in the COVID lockdown has shown seamless progression in teaching learning platforms from offline to online. This seamless transition is an effect of accordance to a national mission, policy planning and management objective that directed the Teachers Continuous Professional Development. The planning ahead is to adopt an online Knowledge management model for teacher’s capacity building in preparation for changing times.

Texts and Textuality - A Critical Engagement with Digital Humanities

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The intersection of texts and technology has become significant in today's context, especially when the world is braving an unprecedented crisis. Almost overnight classes have turned fully digital, libraries have become virtual, and teachers have customized themselves in a desperate attempt to grab the attention of the student on the other side of the world. This unique situation has made Digital Humanities gain momentum, as the advantages of Humanities Computing far exceed the reservations. The endeavor here is to trace the digital preservation that has taken place using design languages, as also the role of digital imaging in the conservation of the ancient Indian cultural tradition based on The Ramayana. Since employing textual tools and computer writing programs to create meaning has been nascent in the study of our cultural landscape, it is important that the problem of inadequate metadata and customized software, as well as the resistance to machine learning should be addressed in the content analysis of our texts. This work examines the efforts made in the field of digital humanities in India, with emphasis on the myths emanating from The Ramayana. The aim is to trace the study of text encoding, concordance, E-publishing and archiving grounded in digital applications, in the context of the Classic text.
Humour as Pedagogical Tool in Higher Education Teaching Learning Practices: A Study

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This article explores the possibilities of utilizing humour as a pedagogical tool to retrieve attention and interest in teaching-learning environment. It further argues that a touch of wit and humour cleverly correlated with the subject taught would not only kindle better learning experience but would also foster healthy relation between the tutor and the pupil. To analyze and validate on the same, a descriptive quantitative study was conducted across teachers belonging to higher education sector in India to find their perception on using humour in classroom teaching. A survey was conducted through a self designed questionnaire using Google forms. The data collected from 147 teacher respondents was used for discussion and analysis. The survey suggests that majority of teachers agree upon the significance of humour as a classroom aid for better engagement of classes. Based on the evidences attained, this research argues and establishes that humour is a necessity in teaching-learning process and teachers must know the art of correlating humour in their academic discussion. Thus, the study undertaken clearly demonstrates that humour can be an effective pedagogy in higher education and related implications.
INNOVATIVE TECHNOLOGY FOR EFFECTIVE LEARNING
Exemplifying The Applications of Educational Institution Management System Through Machine Learning – Education 4.0

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The study aimed at investigating whether machine learning when combined with an educational institution management system will help improvise the students and educational institution administration. For the study, the researcher adopted a descriptive research design. Wherein the data was collected from 13 international schools and 4 colleges adopting an educational institution management system combined with machine learning. Here 72 samples were considered, the samples either belongs to teaching faculty or administrative staffs using a simple random sampling technique. Through the analysis performed on the dataset, it was understood that there is no significant difference opinion among the respondents belonging to different gender, experience and age groups for questions framed to investigate whether machine learning when combined with educational institution management system, will help improvise the students and institution administration. Further according to respondents Machine Learning on EIMS is helping them; predicting student performance, grading students and testing students effectively. Also, machine learning when combined with educational institution management system provides effective decision through computer learning is obtained from Machine learning, further, there is the availability of sufficient historic data for future decision making, and the overall workload for faculty and administrative staffs are reduced.

Innovative and Effective Teaching and Learning by Implementing New Technologies in Education System

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Education and training are a huge piece of each overall population. As an understudy, there are every so often difficulties that can be fit. The emerging progressions in our current reality, the number essentially appears to be ceaseless. With different kinds of novel advancement showing up reliably, we should not be astounded to see a couple of bits of the world experiencing massive changes. Luckily, there are top contraptions that have been made to help them with getting their hindrances. Since the start of cutting-edge systems, learning has never been less difficult. The Educational course of action of the current the truth is the means by which it is today a result of these sweeping changes that various advancements have brought at home, understudies can transfer their schoolwork, and educators can access and view finished tasks utilizing their workstations. Innovation is now moving through study halls as teachers and engineers make an ever-increasing number of items intended to improve instruction. With a deluge of new learning models accessible, conventional instructive strategies will undoubtedly advance in the following decade. The latest progressions related with tutoring for the improvement of progress and advancement is tended to.
A Study on the Innovative Teaching with the use of Technology in the Classroom Situations of the B.Ed Colleges of both Purba Medinipur and Paschim Medinipur districts of West Bengal

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The success of a student depends on the teacher and the innovative methods which they incorporate in teaching. Objectives: An assessment of the traditional teaching methods and the multimedia-based teaching called innovative teaching, as well as to put forward and recommend the various other teaching methods that can be opted for while imparting knowledge to all the pupils is the intention and the purpose of this paper. Here this paper throws light on what is the Innovative Teaching learning practice how many teachers know the innovative methods with the help of technology and how many teachers are using the innovative teaching methods in the classroom situation in the B.Ed colleges of Purba Medinipur and Paschim Medinipur districts of West Bengal. Methodology: To complete the study the researcher used both primary data and secondary data. The primary data were gathered from the college teachers, whereas the secondary data were gathered from the published journals, reports, as well as magazines. The researcher used random sampling method to select 200 sample Teachers who are working in the colleges in both Purba Medinipur and Paschim Medinipur district of West Bengal. For primary data collection, the researcher made use of the schedule of structured interview which had been prepared for the present purpose. Findings: The study reveals that Majority (around 49 per cent) of the Teachers who are in the age group of 36 – 46 years makes best use of technology while teaching. Most of the teachers are aware of Innovative Teaching Learning Practices. Around 50 % of the teachers make their teaching Innovative with the use of Power Point. Moreover, almost 89 % of the teachers feel that it is easy to use the technology for bringing forth innovations in teaching and remaining 11% teachers feel that it is difficult for them to handle technology during teaching.

Unfolding Online Mode of Teacher Education in Context of Indian Education System

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e-learning plays a vital role in the present technological era as it leads to the development of an individual along with the nation. The concept of e-learning was evolved in late 90’s by keeping in mind the objective of enhancing knowledge of people through usage of interactive tapes and other external devices (Vora,2020). Due to its flexible nature, the demand of e-learning has been increasing day by day. Conventional learning doesn’t necessarily give us the required outcome i.e. quality education. Also conventional learning doesn’t allow teachers to be present at different places at the same time. Therefore, e-learning can remove the barriers which are created in conventional learning. e-learning leads to intellectual development of an individual (Vivekananda,2017). Conventional learning has its own drawback such as limited to classroom, time boundation, limited learning etc. Country like India which is democratic in nature has its strength in people. In country like India, e-learning is said to be as a boon and plays a vital role in developing critical thinking skills among the citizens. In this context, the entire focus has been given on development and implementation of new methodologies in context of technology such as gamification, mobile e-learning, cloud based e-learning, micro learning, internet of things etc. The current study aims at Unfolding Online Mode of Teacher Education in Context of Indian Education System. This study is completely based on the secondary data. Therefore, a systematic review was done for the collected literature. In the present study, the research tool used for analyzing the data is content analysis and the research method is descriptive research. The findings of the study indicates that e-learning is beneficial to the stakeholders such as teacher, learner, society and nation.
Patterns of Use of Internet-Enabled Teaching Tools in English Language Classrooms in India

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The COVID-19 pandemic has challenged and forced educators to shift overnight to online modes of teaching. It has also led them to explore innovative ways of using internet-enabled teaching tools in language classrooms. The present study reviews published studies on the use of various emerging internet-based technologies in the teaching of the English language in India. It aims to explore the patterns of their use and as well as the skills they focus on. The researchers selected 50 India-based research studies on the efficacy of technology in English language teaching. These studies were published between 2016 and 2020 in various ELT journals published in India. The following categories were identified for investigation: target language skills, the technology used in the studies, and conclusions of the selected studies. Manual coding through theme-based labeling and grouping of such codes for identification of these categories was carried out. Additionally, a corpus of the selected research articles was also collected using AntConc software to facilitate an exploration of KWIC related to the use of technology. The results revealed that the researchers concentrated on improving language skills like speaking, writing, reading, and listening, along with vocabulary and grammar of language learners through the use of various kinds of internet-enabled tools and technologies such as Google Classroom, YouTube, language apps, Skype, WhatsApp, blogs, video clips, Facebook, Instagram, podcasts, etc. The results also revealed that the reviewed studies did not focus on the creation of technology-integrated study materials and depended mostly on what was already available, irrespective of their cultural and academic context. Overall, this review revealed that technology, when used appropriately, enhances the interaction between teachers and learners, provides comprehensible input and output, helps learners develop language skills, promotes learners' autonomy, and increases their motivation. This review attempted to reveal patterns of use of technology in ESL classrooms, the knowledge of which can facilitate improved integration of suitable technology and internet-enabled tools in language classrooms.

Enhancing Writing Skill of Tertiary-Level Rural Learners through Mobile App – An Action Research

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Writing is a difficult skill to acquire, even for a native speaker of any language. It is even more difficult to acquire it in a second language. Undoubtedly, teaching and training of learners in English language Writing is one of the most challenging tasks for language teachers even in a conventional teaching and learning environment. One could imagine the level of difficulty in teaching Writing skill online. COVID19 pandemic has thrown a great challenge to the teaching community in general and language teachers, in particular to adapt to this changing times. The entire education system is in the crossroads. Given the Indian rural background, teaching and learning of English (ESL) especially, Writing skill is a daunting task. The researcher, an English language teacher at the tertiary-level, was forced to move from offline to online teaching due to the lockdown. The researcher found it very hard to impart Writing skill in English to around 20 rural learners in the class. Several mobile Apps were tried out and finally, the researcher identified 'IELTS Prep Mobile App' to be tried out in an action research. This mobile application is user friendly; allows instant access for free practice tests, prompts grammar tips, conducts exercises, quizzes along with sample questions. The four-month long action research provided the researcher with lots of new learning and experience. The lesson learnt from this effective action research could be very useful to language teachers in similar situations. This paper also highlights the processes involved in identification and analysis of problems in writing skill of the target population and the appropriate strategy employed to overcome the identified problems deploying the mobile app.
A Preliminary Study on the Use of Social Media in Higher Education

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The study focuses on the influence of social media on students, faculty members and administrators to adopt social media for their academic and work purposes in higher education institutes within India. We developed a conceptual model based on the UTAUT model, by adapting a few constructs and customizing to fit the context. 756 respondents attempted the online survey. Of which 400 of them were students, 199 faculties and 157 administrators. Respondents from 105 cities spread across 25 states participated in the survey. Due to the onset of COVID pandemic, we resorted to the online collection method. The study considers three constructs – Perceived Usefulness, Perceived Ease of Use and Social Influence as direct determinants that will influence the behavioral intentions of the users in higher education. We ran a series of basic descriptive analyses, T-tests and ANOVA for the data collected across all groups to determine if significant difference exists in the perception, between groups. Results show that social media is perceived as a driver for innovation amongst all the three groups – students, faculties and administrators. However, there are differences in the positive-negative response ratio, which has however not affected the overall positive inclination of the combined responses of all groups. The current study may be an invaluable source of information for researchers to understand how the groups perceive social media.

Gamified Content and Language Integrated Learning Approach (CLIL): An Innovative Approach for Effective Language Teaching and Learning

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In recent times, educational approaches like Game-based learning and Content and Language Integrated Learning (CLIL) have captured the attention of many researchers, however, very little research has been done on the learning process. The main objective of this study is to investigate how learning happens in an educational design that amalgamates these two firmly established teaching approaches. This paper also studies learners’ motivation and engagement in a Game-based environment. It is believed by many researchers like Ricardo Casan Pitrach(2017) and Kyriak Dourda et al. (2013) that this combination facilitates a cognitive and motivational foundation for learning since it signifies a meaningful and contextualized activity and allows learners to broaden their cognitive skills. During the last decade, the game-based learning (GBL) educational approach has become well-established in the contexts of teaching and learning, capitalizing on the characteristic of games to make learning more fun and effective. CLIL as a form of dual-focused educational approach has gained popularity among teachers and researchers over the recent years. It is well-known for its integration of a non-linguistic curricular subject with a second/foreign language, providing the opportunity to teach both academic tasks and higher-order thinking skills in a safe and enriching environment. This paper aims to review the available literature and discuss the teaching potential attained from the amalgamation of GBL and CLIL. It is proved that game-based learning environments increase the effectiveness of language teaching and learning. This study concludes that with the integration of Game-based learning and the Content and Language Integrated Learning Approach, teachers find an interactive model to provide more scaffolding to their learners. In addition, the use of games as a tool will significantly motivate learners to actively participate in the learning process.
Effectiveness of Vevox ARS-based Flipped Learning Method in Pre-service Teacher Training Program

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The flipped learning model is an effective pedagogical model that can create more engagement in learners. Through using technology, the teacher can deliver their lectures online mode. Here the teacher used the tool Vevox for creating effective flipped classroom interaction and had the intention to study the effectiveness of Flipped learning engagement. The researcher priorly selected the topic related to educational psychology to transact with the 1st semester of pre-service student teachers. The flipped class was conducted with self prepare audio, video, and e-text materials. Part of Flipped learning the Vevox tool used in the classroom interaction. A post-test control group design was adopted for the experimentation and finally, an achievement test was conducted. The collected achievement test scores data was analyzed through JSPA statistical package. The result revealed that Flipped learning with Vevox is an effective teaching method compared to the traditional learning teaching method.

Effectiveness of Implementing Experiential Learning and Rubrics Based Assessment in Microprocessors and Microcontrollers Laboratory Course

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Today’s dynamic world demands the design and deployment of embedded systems in various applications including both domestic and industrial areas, especially in the establishment of a smart and sustainable society. This necessitates the inclusion of hardware based courses like Digital Electronics, Microprocessors, Microcontrollers and Computer Architecture. These pre-requisite courses introduced in the early semesters pave the way for students to develop keen interest, skill and proficiency in the area of Embedded Systems and System-on-Chip design. Critical thinking and programming skills are indispensable to gain proficiency in these areas. However, the students of Electronics and Communication Engineering, generally lack interest in programming based courses, a fact which has been observed time and again by the faculty handling these courses. Therefore, the challenges that lay before the course instructors are to kindle the students’ interest in these courses and also to make them industry-ready engineers. So, conducting the laboratory courses with the experiments beyond the curriculum and motivating them to complete the course with capstone projects helps the students to improve their programming and design thinking skills. In order to tackle the above mentioned challenges, experiential learning methods like Project Based Learning (PBL) and active learning methods such as Live Coding and demonstration are employed for Microprocessors and Microcontrollers laboratory course. A quantitative metric namely, “Coding Quotient (CQ)” is used to measure the critical thinking ability of the students. This paper also points out the importance of a well-defined and customized rubric based assessment system, to ensure consistent and fair grading, when the laboratory course is handled by multiple instructors or graduate teaching assistants. This rubrics based assessment helps to evaluate the graduate attributes like technical skills, team work, individual contribution, communication skills and capability of providing solutions to real time problems. A post-laboratory student survey is also conducted and the “Satisfaction Index (SI)” obtained from the survey validates the effectiveness of the employed method.
Comparative Analysis of Innovative Tools and Technologies for Online Teaching-Learning Process

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In December 2019, an infectious respiratory disease called COVID-19 was first reported in China and since then the disease has spread quickly around the world. Most of the educational institutions around the world were temporarily closed to limit the spread of COVID-19. However, the teaching-learning process never stopped but was shifted to a new era of virtual and online teaching. This new era of teaching-learning includes various innovative teaching-learning tools and technologies which have filled the empty space created due to the absence of traditional teaching in this pandemic situation. Teaching-learning process consists of four elements namely preparing, absorbing, delivering and assessing. Many technology driven innovative teaching-learning solutions are proposed by various technology giants to provide support for all the elements of the teaching-learning process. Use of these innovative teaching-learning solutions is not serving as an alternative but can be considered as an add-on needed for the effective and better teaching-learning process. Teachers and students are two main stakeholders of this teaching-learning process and their approach, response and perception play a crucial role in the success or the failure of adoption of new tools and technologies. To facilitate meaningful insights about new teaching-learning solutions to the stakeholders, this paper covers detailed comparative study of different ICT tools, online virtual meet platforms, various learning management systems, virtual lab platforms and different online assessment tools. Primarily, the outcomes are based on cluster analysis over the data collected by surveys and interviews including a total of 687 teachers and students from various institutions across the state and outside.

Management Development Programs and Consensus Building through Management Development Games

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The paper aims to study the different types of Management Development Programs (MDPs), their purpose and their similarity and differences in contributing towards development of different skills. A case study of a Management Development Game is also studied where the paper aims to analyze & understand the probable results and understandings developed through the game during the MDP "Communication for Managerial Success" at IIM Indore which aimed at establishing consensus. The research design is exploratory in nature as it is done to find out the different types of MDPs. It also explores all the possible outcomes of the Management Development game taken as a case study. Different types of MDPs focus on development of different types of skills. Also, the development is of different level of people through different programs. The consensus building game highlights that the most profitable decisions in an organization are not always based on probability but based on finding the solution which is "win-win" for all.
Originality – The paper highlights which MDP is important for which skill and hence in future software can be developed for selection of MDP for the development of a specific skill in a given level (lower, middle, upper Management) of employee and then the skill level attained can be tested using an appropriate selection test. The paper highlights the interesting learning opportunities game-based learning provides by investigating a live example.

Study of Indispensable Role of Non-Verbal Communication for MBA Students in Seeking Jobs During Covid Scenario

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Study of non-verbal communication has become one of the major aspects for an HR manager in an organization to judge the professionalism and kinesics psychology of a new candidate at the time of recruitment process. Despite being strong in subject knowledge, many MBA students, especially from tier-II or tier-III business schools struggle with non-verbal communication and are not selected in recruitment process due to inefficiency in their professional etiquettes and overall body language. The present paper studies the methods for training MBA students from a tier- II business school in non-verbal communication for one semester (6 months); the effectiveness of the methods; and how successful was it in converting students in their recruitment process, especially during the pandemic of COVID-19. The author studies various modes of training through online presentations and video calling and identifies the gaps in students. After assessing the effectiveness of the modes, a remedial step was taken in which various effective techniques such as learning videos on body language and online etiquettes; role-play practice through video chat; and online mock interviews were introduced to students. The learning outcome of the aforesaid activities at the end of six months included enhancement of non-verbal communication in almost 60% of the students and a conversion rate of 75% against 67% in the previous year.

Automatic Generation of Math Word Problems for Assessing the Learner Skills in Adaptive Learning Systems

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Assessments form an integral part of learning management system and influence the individual’s learning process. Experts spend enormous amount of time to generate a variety of questions as the same may not be reused over and again to assess the knowledge levels. At the same time, manually creating questions on an ongoing basis is a tedious task even for the experts. Generating questions is both art and science as one must be very creative in designing and at the same time meet the learning objectives. A new field of research namely, Automatic Question and Answer Generation (AQG) evolved to address this need in the fields such as Medicine, Philosophy, English language, etc. Depending on the type of questions such as Multiple-choice questions (MCQ), Fill-in the blank, short answer questions, etc., template-based, Natural Language Processing (NLP) based semantic, syntactic approaches have been explored in the literature.
Unlike other fields where there is a lot of textual information to clarify a concept but subjects like Chemistry, Physics, Mathematics, and Statistics have numbers, symbols, equations, etc. which makes the task of AOG challenging. Recent studies in generating Math Word Problems using Natural Language Generation (NLG) based Artificial Intelligence (AI) methods have shown very encouraging results. In these methods, questions are input to generate more questions of similar difficulty which will certainly help to build the question bank; however, it would be more useful if we can generate questions with varying difficulty levels. In this work, we propose to investigate the feasibility to add and vary difficulty level of questions in the generation process and conduct a comparative study of various neural network methods for Math Word Problems. To improve the model learning, we use experts to validate the relevancy of the generated questions. The proposed method when included in personalized learning systems will enhance the learner skills.

Integrating ICT for Effective Teaching & Learning in the Online Pedagogic Environment: An Empirical Study

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The coronavirus pandemic has catalyzed and hastened the teaching-learning methodology in higher education globally, leading to a hybrid interface between tutors and learners through the use of unique and innovative teaching methodologies. The NEP 2020 refocuses the objectives and role of HE towards developing contributing citizens who are capable of building an equitable, inclusive, and plural society. In keeping with this mandate, there is a need for advanced teaching and learning strategies in the delivery of HE that could combine synchronous, self-study with asynchronous interactions through both: the virtual and the real-life medium to promote effective and retentive learning and vocational skills. In the pandemic & post-pandemic era, therefore, the future of learning is becoming more dependent on technology. Integrated open-source digital solutions and learning management software’s are thus facilitating a seamless bridge between the conventional learning patterns and its cross-integration with the virtual classroom. This paper explores and documents the use of the virtual platform as a tool of the new-age pedagogy as a way of learning to engage learners and develop creative and critical thinking abilities for a life-long learning. In this empirical study, the data-sample of 338 students has been collected from the various Professional Courses of the University of Petroleum and Energy Studies (i.e., Management, Engineering, Law, Health Sciences, Mass Communication, Design, Computer Science) to study the impact of ICT for Effective Teaching & Learning in the Online Pedagogical Environment. The Statistical tool ‘Multiple Regression Analysis’ has been used to test the impact of Independent Variables i.e. Innovative Pedagogy, Student-Centred Teaching Methods, Constructive Assessment on Dependent Variable ‘Effective Teaching & Learning’. The findings of the study show that all three factors i.e. Innovative Pedagogy, Student-Centred Teaching Methods, Constructive Assessment are significantly contributing towards Effective Teaching & Learning except the ‘Constructive Assessment System’.
Attitude of Researchers Towards Information and Communication Technology in Pursuing Research

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This research article studied about the attitude of researchers and their dependant towards Information and Communication Technology (ICT) for pursuing research. Purpose of this study, wants to motivate the remote aspirants to pursue their research with the support of ICT and to identify the strength of ICT in doing research. Study was carried out with researchers of arts, science and engineering discipline candidates those who were either by employment or for education belonging to a particular management group of educational institutions, situated at a rural village in India. Normative survey method and statistical package for social science (SPSS) were applied to study and analyses the attitude of researchers about ICT at that time of research with respect to age, gender, discipline, marital status, full time / part time candidature and Ph.D., completed peer / ongoing peer category. Findings concluded that ICT can be the powerful tool to bridge the peer in an effective way apart from limitations such as distance, economy, expert personalities, resource insufficiency, natural hazards and pandemic situations.

Blended Learning: Can We Achieve the Expected Learning Outcomes from Students

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The present era of the COVID 19 pandemic has shifted the focuses of universities and schools from the traditional form of classroom learning pattern to the online mode of education. The student’s perception of their learning in various experiences to the context of Blended Learning has re-defined the concept of education in their approach. It identifies perceived barriers and enablers in the new learning environment in the Indian context. Thematic analysis has been conducted on data collected from students via structured questionnaires and it involves two dimensions: (1) Learning Experiences via online mode, (2) Learning Outcomes from online mode. Findings suggest that quality learning experiences are important in long run but not enough to provide quality for the overall student’s experience. Students view the term as a holistic term that integrates academic and apostolic aspects.
Teaching-Learning Practices from Gurukul to Google Classroom

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India has a rich culture of education system from the antiquity. The ancient education system was basically evolved from the religious texts such as the Vedas and Upanishads. Gurukulas were the learning centres where the gurus provided the learners with residential facilities as well as educational opportunities. The educational practices not only involved the study of various subjects such as philosophy, astronomy, science and mathematics but also included the study of fine arts, religious scripts and skill-based vocational training. The teaching and learning was learner-centred as gurus involved their students in peer learning, group discussions and debates. Teachers and students had close contact as Gurus would take the whole responsibility of their students and train them till they get satisfied with the development of the learners. Gurus had the chance of deciding curriculum and the strength of their students. This method of teaching and learning focused on the holistic development of the learner.

However, the teaching and learning practices in India changed drastically due to social, economic and political reasons. Many changes have taken place in teaching-learning contexts, classroom setting, curriculum design, methods of teaching, evaluation, and teacher-student relationship. Moreover, with the advent of technology and scientific progress, the areas of study and nature of professions have varied. In contemporary methods of teaching and learning, education has evolved as an academic activity focusing on studying various courses with prescribed subjects. The students are engaged in the pursuit of material knowledge to get into some job. This has obviously led to radical changes in teaching and learning practices.

In this paper, the focus is on how teaching and learning practices changed over a period and what the impact of it is on the present generation of learners.

Effective Collaborative Learning Through Social Media Platform (WhatsApp) in a Mega Course

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In engineering education, as class sizes increase day by day, the teachers and students face challenges in terms of clearing doubts, especially in a mega course. There are challenges for one-to-one interactions owing to the limitation of time for both students and teachers. Though there is a chamber consultation hour system, it has its limitations as it is one hour per week, and students have to come to the faculty to get their doubts cleared. The present generation of students are very tech-savvy and are very active on social media platforms on their cell phones and continuously engaged in it. They want their doubts or queries to be cleared or addressed quickly; they become impatient and, over time, lose interest in the subject. BITS F111 Thermodynamics is a foundation course at BITS, Pilani, and is compulsory to all disciplines and is offered in the first year with over 1000 students. So to address the challenges mentioned above in the mega course, the author used a top-rated social network, i.e., WhatsApp, a messaging app, for reaching out to the students and vice versa. He used it effectively for very quick doubt clearing of students, especially during the exam. This article attempts to study WhatsApp's social media platforms in a mega course for the best learning experience for students. The objective of the study is to assess the affectivity of WhatsApp to first-year students and check the perception of learners via WhatsApp.
EDUCATION POLICY AND ADMINISTRATION
Effectiveness of an Emotional Intelligence Training Program for Undergraduate Medical Students

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In today’s health care environment, terms like empathy, compassion, communication, and patient satisfaction are gaining more importance. Apart from the delivery of quality health care, aspects like a conducive relationship between doctor and patient, clear communication, empathy, compassion, etc., determine the level of patient satisfaction. In this context, Emotional Intelligence (EI) competencies are considered important for the personal and professional development of medical professionals. EI is said to enhance a gamut of soft skills like communication, conflict resolution, empathy, teamwork, resilience, etc., of medical professionals. Given the important role played by EI in the health care sector, medical schools have started using EI assessment as a criterion for admitting students into medical schools. Research studies stress the need to include EI training in the medical curriculum. With this background, the present study aimed to implement and evaluate the effectiveness of an Emotional Intelligence training module for undergraduate medical students. The sample (N=127) consisted of two groups, namely, a training group (n = 96) and a matched control group (n= 31). The Emotional Intelligence training program was delivered to the training group. The Emotional Intelligence Test for Medical Students (EIT-M) was administered to both groups and results were compared. EI scores of students who underwent EI training were significantly higher when compared to those who had not undergone EI training (p = 0.12). It was also found that among the three components of EI, namely, perception, appraisal, and regulation, the regulation (R) component of EI was significantly higher among the students of the EI training group as compared with the control group (p = 0.20). The inclusion of training programs for the development of EI during the undergraduate medical course would help allow students to imbibe these principles and integrate them along with clinical skills and later into their professional lives leading to patient-centric health care.

National Education Policy 2020 – Roles and Competency Framework for Academic Leaders

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The higher education institutions will undergo a major paradigm change in the next 20 years. The academic leaders at different levels at the governance level, head of the institutions, deans, head of the department, educational programmes heads and team leaders will play a significant role in implementing innovations, reforms and a major change in the institute to achieve quality, accreditation and excellence in education. Effective leadership at all levels in the institute does not happen naturally based on the experience and qualification of the persons. The leaders are trained and developed to accept the challenges of change as envisaged in the national education policy 2020. The leaders are mentored to stretch their capability to perform their best. The leadership roles and competency framework developed in the paper are based on the provisions of national education policy 2020, literature review and experiences of the authors. These roles and competencies are validated by 5 senior faculty members working in the
area of higher education for designing and implementing the reforms. Roles and competencies are articulated at three levels governors and head level, senior professors level, and assistant professor level. All roles and competencies are articulated in the context of innovation, reform and major change. These roles and competencies will be useful to the institutions for selecting, deploying, redeploying leaders for different innovative purposes, training and development, mentoring, coaching and guiding, succession planning, performance appraisal, assigning a higher level of leadership responsibilities, and giving recognition for achievements. The role and competency framework will be useful to ensure continuity of the innovations till the vision of the institute is achieved. The right selection, deployment, and redeployment of the right person will make a difference in the design and implementation of innovations at the same time ensuring the satisfaction of the person.

Audit of Mentoring Programme for Faculty Members

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The higher education institutions will implement a mentoring programme for faculty members to train and mentor them for implementing the provisions of the national education policy (NEP) 2020 (MHRD, 2020). The University Grants Commission (UGC) has already issued the guidelines for induction and mentorship of teachers of higher education (UGC, 2021), All India Council for Technical Education (AICTE) has also issued the guidelines for mentoring the technical teachers (AICTE, 2020). Training and mentorship at the national level will enable faculty members to prepare themselves for accepting the challenges of higher education in the context of national education policy 2020. Higher education institutions will have a unique vision to achieve in the next 20 years, therefore they will build and develop the capacity and capability of the faculty members to implement innovative approaches in academics and research to achieve their unique vision. This will call for a professionally designed mentoring programme for faculty members, which is effectively implemented, audited, evaluated, and improved during the cycle of implementation and in the next cycle of implementation.

Innovative Pedagogical Practices for Teaching Legal English

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Language functions according to the demands of the sociocultural environment. There is a rise in number of people using English as their first or second language. This shift indicates the trend of embracing the language as a professional requirement. Teaching and learning English is not only a global necessity but also a cross-disciplinary phenomenon. It is imperative that learners of English get acquainted with the customized usage of the language present in different registers. English for Specific Purposes acronymed as ESP in academics involves creating need-based curricula of teaching and learning English for specific vocations. Legal English is one such register that has evolved over a period of time and developing a learner-centric curriculum for the same is indeed a challenge. Introducing innovative pedagogical practices directs one to mitigate this challenge steadily. The present research is thereby sought to analyze multiple
ways to ensure effective learning of legal English. The objective of this study is to promote collaborative efforts even while teaching remotely and to make the pedagogical practice of Legal English more engaging and an enriching experience. The research will involve a descriptive and analytical methodology to delve deeper into the domain of Applied ELT (English Language Teaching). The study aims to initiate Outcome Based Education by integrating a task-based approach for teaching phonology, morphology, syntax, semantics, and pragmatics to law students. From this research, it can be inferred that through the medium of incorporating unique techniques like role play method, synchronous as well as asynchronous instruction - legal maxims, politeness maxims, and even remedial grammar can be taught efficaciously.

Blended Teaching and Learning in Teacher Education Sector in India: Present and the Future Prospects

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The resource crunch nature of social sector in India prevailed since ages and probably will prevail in future as well. Education has been under resource crunch condition since independence therefore educationists and economists have unanimously raised the issue of increasing GDP share to education sector. Since Kothari Commission (1964-66) to National Education Policy 2020 have recommended raising GDP contribution to education to 6%, but still it is a long sighted dream. On the other hand, the issue of quantity in education sector in general and higher and teacher education in particular have been highlighted for decades especially in terms of availability of teachers/faculty in the institutions. FICCI (2018), AICTE (2019), The Hindu Survey (2016), India Development Report 2012 and several other policy documents including Demand and Supply Study of NCTE 2011 have raised the concerns of lack of teachers in entire higher education sector to the level of 40% (appx). Besides, the professionals prepared in the institutions of higher learning especially in Engineering, Medical, Teacher Education, Management, etc. are always questionable in terms of their professional capabilities and justification of the degree they have acquired. Such scenario in Indian education sector has also contributed in increasing not only unemployment but also the educated unemployment.

In such state of affairs of education in India, Blended teaching and learning environment can be considered as an effective tool/model of educational practice in the institutions of higher learning in general and teacher education in particular. The practice of Blended approach can result in cost effectiveness in education sector, enhance quality and effective teaching learning environment in classroom transaction, reaching the unreached stakeholders in state funded and resource crunched institutions and moreover the flexibility and freedom of learning by the learners. The present paper will make an attempt to study the present practice of technology in education and the available resources at one hand, and also highlight the new policy on Blended mode of teaching and learning in education by the UGC (2021). It will further attempt to locate the policy of Blended teaching-learning in teacher education in the light of National Education Policy 2020.
Unembellished Digital Education: A Paradigm Shift for Education in India
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The forging of the National Education Policy catalyses the repeated need for student's education, not for evaluation, but life outside the confines of an educational institution. The Indian Education Sector needs investment in digital infrastructure, development of online teaching platforms and tools, virtual labs and digital repositories, training teachers to become high-quality online content creators, designing and implementing online assessments. During the pandemic, India's education system went through a phase of realization and learning, hacking their way to find a prompt solution to the crisis. The introduction of alternative paths for traditional education will provide long term benefits in the literacy condition of the country. A digital system will familiarize students with technology which will only be integrated more into our lives as it develops.

A Digital transformation will provide students with access to endless learning resources available on the internet. As we move towards a new normal of online learning, the Policy plans to create a dedicated unit to develop the digital infrastructure, content and supervision for educational institutions. The Methodology consists of Policy Analysis and highlighting the changes brought by NEP-2020 in Virtual Education, analysing data collected via surveys and secondary sources. This study aims to gain insights into the new changes adopted by NEP towards Digital Education and its impacts on beneficiaries. This research aims to explore a few aspects of NEP-2020 that will have a transformational effect on Digital Education in India. This paper will bridge the gap by investigating the hurdles that stakeholders will face.

Exploring the Parameters of Syllabus through Teachers’ Perception
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The definition of syllabus has confused various thinkers and theorists for a long time. There are basically two main schools of thought providing the definition. In the first place, syllabus is considered as a part of curriculum which deals with the course material and its sequencing only; on the other hand, syllabus is defined in a broad manner encapsulating the areas like method, evaluation, time and objectives. The present study attempts to analyse the teachers’ perception regarding their understanding of the different parameters of syllabus design after performing an Exploratory Factor Analysis (EFA). A questionnaire comprising 21 statements on the different parameters of syllabus, was administered to the teachers teaching secondary grade with a view to understand the teachers’ perception about the different aspects of syllabus. The EFA results reflect that teachers perceive that syllabus consists of four parameters. The study helps in understanding how teachers perceive the different aspects of syllabus.
Science Teaching in Schools and Scientific Temper

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The word “Scientific temper” was first used in Indian context by the first Prime Minister of India, Shri Jawahar Lal Nehru in his book “The Discovery of India”. Nehru believed that science is the driving force which will take humankind to new heights. The Nehru Centre of Bombay published a document in 1981 named “A statement on Scientific Temper” in which many renowned scientists tried to push a nationwide debate about scientific temper and also tried to define it. They claimed that the ‘method of science’ is at the core of scientific temper. Scientific temper is an attitude which helps a person in making scientifically informed and rational decisions in life. The lack of resources and training of teachers in terms of perspectives in science education and content knowledge leads them to present textbook concepts either unscientifically or as ‘half-truths’. Any individual including science teachers needs substantial exposure to different kinds of reliable resources of knowledge to check their understanding continuously. Teachers, just like other common people, fall into the trap of daily obscurantism and accept the easiest explanations which are presented to them by immediate sources of information. Lesson plans designed using the attributes of science can be a useful way to inculcate scientific temper among children. This paper highlights the gap between how science is presently being taught in schools and how it should actually be taught.

English for Medical Purposes and Its Status in India

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English is the language of science and technology; medical sciences are not an exception. This paper focuses on the status of English in medical education in India. New knowledge and research findings have to be shared for the well-being of patients in medical fields through research papers, conduct of workshops and conferences. Medical professionals need to interact with people from other states making it mandatory for them to be proficient in English and it applies even for traditional medicine students. Unlike other countries we don’t have specific English courses for medical students in India, medical and dental students do not have any English course at all in their curriculum. The English for General Purposes (EGP) what they learn in their secondary school courses would not be useful for their professional growth. Hence needs analysis has to be conducted before deciding the curriculum for the students of medical sciences in India. English language skill requirements need to be addressed and a course to be incorporated in medical education in India, which should have medical discourses including presentation skills and writing skills, so that they can grow professionally as well. This paper throws light on the position of English in Indian medical education and its importance in medical field.
Transforming Teacher Education Institutions as Learning Organisations: A Strategic Approach to Innovative Teaching-learning Practices

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A learning organization is an organization that encourages and facilitates the learning of all its members to continuously transform itself and to achieve excellence. Transforming teacher education institutions as learning organizations will be a strategic approach to innovative-teaching learning practices and it will cater to the educational needs of 21st century institutions. The present study was intended to find out different perspectives of pre-service teachers and teacher educators towards transforming teacher education institutions as learning organizations. The study had explored the possibilities of innovative teaching-learning practices in the purview of a learning organization. The study had also examined the factors which influenced TEIs for becoming learning organizations. The present study was descriptive survey research and a mixed-method procedure was followed for data collection and analysis. The study was confined to pre-service teachers and teacher educators of RIE, Bhubaneswar. 53 pre-service teachers and 09 teacher educators from RIE, Bhubaneswar were the participants of the study. A Questionnaire as a tool was used for the collection of data from the participants. The major findings of this study showed that most of the participants agreed that transforming TEIs as learning organizations will lead to innovative teaching-learning practices and we can use it as a strategic point of view. The majority of the participants revealed that if we will effectively work on transforming TEIs as learning organizations then we have to shift the current teaching-learning practices and a lot of opportunities will be automatically created through the transformation of innovative teaching-learning practices. The study also found some of the factors which influenced TEIs to become learning organizations such as current needs in teaching-learning practices (Due to COVID-19), recent advancement in pedagogical practices, changing characteristics of learners, Suggestions of NEP 2020 etc. Based on findings the study suggests implications of the study.


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The COVID-19 Pandemic has distraught the educational system across the world, as millions of students and educators have dislocated from their university spaces to their homes. Lockdown and social distancing measures have led to a reinforcing web of issues in the education system in India. To address the educational disruption caused by the pandemic, different policies and plans were prepared by the University Grants Commission, Ministry of Education, Government of India. In the process, the state and educational administrators have turned their eyes towards technology-mediated teaching and remote access classroom setup. With this backdrop, this piece of research critically reviews the educational plans and policies that were formulated to impart quality education for all during the crisis. In particular, it applies document analysis as a research method, to investigate the drivers and barriers in implementation of these policies. The research review reveals that the sector is anticipating huge scalability of blended learning, in response to the pandemic and technological advancements. Yet, there are some barriers, such as access to digital infrastructure, online learning competencies, and pedagogies that would lead to socioeconomic disparities in educational outcomes. Therefore, it is important for the students, educators, and practitioners to understand the essence of these plans and policies and address the crisis of unprecedented disruption. It is also deemed helpful for the educational stakeholders to build up a long term resilient education system for the democratization of quality education, as emphasized by SDG4 in post-COVID world.
PANDEMIC-DRIVEN EDUCATIONAL RESEARCH
Teaching, Technology, and Pandemic: Experiences of A Teacher

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Teaching and learning process has undergone a substantial change since the onset of the pandemic due to a shift in the established mode of knowledge sharing. In this paper, we present an overview of the changes that have happened in the knowledge dissemination process, with a focus on India, with respect to engineering education. We present results from a targeted survey of the students from different engineering fields of study and their experience of the online education. The findings highlight the shortcomings of the online education system from the student’s point of view. Further, we discuss an important aspect, that is, the technology which is the backbone of this shift in the learning model. The digital divide, also being a recurrent theme towards development of the next generation telecommunication technologies and role of electronics hardware, an important constituent to fulfilling this shift in the education, is also discussed in this work.

Transformative Learning during the Times of Pandemic

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Transformative learning particularly focuses on adult education / young adult learning; means that learners can adjust their thinking based on new information. Jack Mezirow is known as the founder of transformative learning; found that critical reflection and critical review could lead to a transformation of our understanding with the idea that as our world view is changed, we learn more, and that helps us grasp new concepts/ideas. This explains that learners who are getting new information are also evaluating their past ideas/understanding, and shifting their worldview as they obtain new information through critical reflection. It goes beyond simply acquiring knowledge, and dives into the way that learners find meaning in their lives and understanding. This kind of learning experience involves a fundamental change in our perceptions - learners start to question all the things they knew or thought before and examine things from new perspectives in order to make room for new insights / information. Experts agree that this kind of learning leads to true freedom of thought and understanding. Transformative learning has two basic focuses - instrumental learning and communicative learning. Instrumental learning focuses on task-oriented problem solving, and evaluation of cause and effect relationships. Communicative learning focuses on how people communicate their feelings, needs, and desires. Thus, students need to be able to focus on different types of their understanding and view new perspectives that are both logical and emotional in order to challenge their previous understanding. This is a process of individual and collective growth that allows for transformation / self-transformation; serves as a “preparation” for life to analyze and critically reflect on circumstances that would help students to become social activist. Current / aspiring educators can greatly benefit from this learning model, and implement strategies in ‘New Normal’ classrooms to motivate online learners.
Psychological Crisis on Higher Education Students Due to Remote Learning during COVID 19

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In 2019 the whole world got hit majorly, due to Pandemic COVID-19. It has shaken the entire economy of our country but also forced a drastic change in pedagogy where all the educational institutions were closed due to lockdown and were forced to adapt to Online teaching. The COVID-19 Pandemic has altered the way we think about the teaching learning process. While most of the people/researches and education institutes took it as boon for continued education. However, the fact is that remote learning has indirect implications on student’s fragile mind and affecting their psychological health by adding to their distress level. It is mainly due to various reasons like social distancing, lockdown, academic stress where coping is a major challenge, anxiety issues, sleep disorder, frustration, depression et. Thus, the remote learning has also added to the all these problems, and its subsequent effect on social, physical and mental health of the students. All these have led to most detrimental impact on the young minds of Students. This paper shall be addressing the issues related to how COVID 19, lockdown and consequently remote learning has impacted the students’ Psychology leading to stress, and will also suggest measures to overcome the same. The study has taken HEI students from Uttarakhand region as respondents for the sample population of the study. Since this is a quantitative study, SPSS 21 along with regression and correlation analysis shall be used.

Digital Learning: A Survival Strategy to Unlock the Opportunity

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India has a great history of education. It has the oldest Universities like Nalanda and Takshashila. The Indian education system and the related technologies has changed drastically over the last few decades. The history and evaluation of digital learning can be traced back in the 19th century. Though it has been in existence since 1999, it became a part of almost everyone’s life only during COVID -19 crises. Online learning has been a buzz word for the last one year. The urban India, directly or indirectly has witnessed its advantages on a greater scale. Lockdown has impacted life of all generations who were previously enjoying their normal life. However, every generation has accepted this challenge and is moving ahead with some or other solution to adapt to this new normal. This pandemic has drastically affected almost all the sectors and occupations from agriculture, manufacturing to various services, an education industry is not an exception to this. However, where there is a will, there is a way. The pandemic period has actually created much needed self-time - for pursuing studies, engaging into interest and hobbies. Digital teaching - learning has become a saviour especially to the education sector. E- Learning has its upside where an individual can learn, unlearn and relearn to flutter the wings of aspiration and take a leap. This study is based on primary as well as secondary data. The study first offers an overview of digital learning from teachers as well as a learner’s point of view. It discusses various digital learning platforms available in India. The primary data has been collected through a well-designed and structured questionnaire. A sample size of 116 respondents has been studied. The primary study seeks to map the familiarity of and preference to the digital learning platforms. The respondents were asked about the purpose, time spent, their commitment, effectiveness of and satisfaction towards digital learning. The results were analyzed and suitable conclusions were drawn. This research aims at exploring acceptance and applicability of digital learning as survival strategy for continual education during pandemic period.
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Student Perspective of Sudden Shift from Traditional Classroom to Online
Teaching Mode under COVID-19 Situation: A Case Study

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The study aims to understand the perspectives of higher education students regarding the sudden transition from traditional class to online mode during COVID-19 in India. A survey was conducted among 260 undergraduates and graduate engineering students; based on 15 quantitative and 4 qualitative questions. Students appreciate the flexibility they acquire in terms of timing, necessity and interest to watch the recorded lectures. The peaceful learning environment without distraction/disturbance helps them to focus. But, the unfamiliarity of the mode and the relaxed unmonitored situation are considered unfavorable. Improved technical infrastructure and better preparedness from the teacher side are recommended. This study articulates the students’ perspective and expectation from online mode of teaching/learning, which would help improving the quality of the instruction process. Authors understand that this study addressing the entire instructional framework delivered in online synchronous mode due to the unprecedented pandemic has not been reported previously.

Integrating Web 3.0 Tools for Online Language Teaching and Learning:
Prospects and Challenges

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The sudden outbreak of COVID-19 has led new challenges to online language teaching and learning. With the advent of technology in the classroom becoming indispensable, the need to bring in innovations is a major concern for all language enthusiasts and ELT teachers. The evolution of internet has opened unbelievable prospects and challenges in web-based language teaching and learning. The rapid growth of web, i.e. from Web 1.0 which started as Read only medium to Web 2.0 which established itself as Read/Write medium, is currently evolving as Web 3.0. Web 3.0 not only allows users to Read/Write/Execute medium but also allows machines to carry out some of the thinking so far expected only from human beings. It has the potential to radically change what we assume about traditional teaching and learning and created new tools and technologies for facilitating web-based education and learning. The objective of this paper is to explore the multiple dimensions of adopting Web 3.0 technology in Online Language teaching with issues involved in the complex and changing relationship between technology and language learning. It attempts to study how the use of web 3.0 would foster a more open approach to learning with students’ maximum participation, knowledge personalization and collaboration and interaction with peers and teachers. The paper also investigates the various aspects of reactionary responsiveness, dynamic adaptivity and distributive authority to make a true online Language classroom a reality. By taking note of the parallels between the advancement of the web and online learning, the study attempts to make predictions of how future variations in the web will actually bring about modifications in language teaching and learning.
Emergency Remote Teaching and Technology Comfort: Mapping Perceptions of English Teachers from Schools in Rural Areas of Rajasthan during COVID-19 Crisis

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The present study explores the perceptions of English language teachers in rural areas of Rajasthan, India in terms of their teaching approach, their methodological and technological preparedness, and the kind of teaching materials they have been using and developing since Lockdown 1.0 in March 2020 when they had to shift to Emergency Remote Teaching (ERT). The study also investigates the challenges faced by the language teachers for content delivery, assessments, and the students’ engagement during classroom interactions. Besides these, the technological challenges related to the accessibility and affordability of hardware and internet services are also discussed. The data has been collected through surveys from 147 English teachers from various schools in rural areas of Rajasthan, India. The survey results indicate the need for a teacher training program in using technology for online pedagogy, exploring the possibilities of making education accessible in remote areas and new avenues of teaching-learning. The implication of this study also gyrates around a call for restructuring the English language teaching in the Indian education ecosystem and curriculum design for the Post COVID-19 era.

Virtual CS Education in India: Challenges and Opportunities

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In the wake of the COVID-19 pandemic, institutes for higher education worldwide, including in India, were forced to migrate to fully online classes. A country like India, with limited internet connectivity and infrastructure as well as its socio-economic, presents unique challenges. In this article, we discuss how education in India, particularly in the field of Computer Science (CS), is affected, and where the challenges lie for students, faculty, researchers, and administrators. We share our experiences related to the migration of CS classes online in a reputed engineering institute in India with more than 15,000 students over three campuses. We also discuss ways to overcome the challenges posed by the digital divide. The main objective of this paper is to generate interesting discussions that could potentially lead to advancements in information and communication technologies geared particularly towards CS education in developing countries.
Issues and Challenges in Research During Pandemic-With Special Reference to Uttar Pradesh

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The COVID-19 pandemic changed the way we live our lives. Remote learning and teaching change the research and education system. Social distancing and work from home create challenges for researchers in continuing research work. The paper examines the issues and challenges faced by research scholars and academicians of Uttar Pradesh. The population of the study consisted of research Scholar and Faculty in selected universities in Uttar Pradesh.

The researchers adopted a quantitative approach which involved the use of questionnaires and 150 Research scholars and 10 Faculty participated in the study. A convenient sampling method was used to collect data from five major cities of Uttar Pradesh through Questionnaires using a 5-point Likert scale to 150 research scholars and 10 faculty of private universities and government universities. The findings of the study have identified eight major problems during the COVID-19 pandemic. Based on data analysis these problems are: a lack of e-learning facilities, field survey, a financial constraint, a conducive environment, teachers' attitudes, learning new skills, a lack of enthusiasm, and stress and anxiety.

Multiple Intelligences infused ELT Precept in the course of Covid-19: A Pedagogical Proffer

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Language and life are inseparable conceptions; both are fused together by human beings and milieu. At present, human race witnesses a different lineament of life under COVID-19. Every aspect of life of an individual specifically, health, lifestyle, economy, education, and beliefs are being modified because of the effect and influence of C-19; Second Language Teaching and Learning are not exceptions. In this pandemic, all individuals are well acquainted with the precautious measures. Certain expressions and phrases receive space at the subconscious levels too namely, mask, social distance, vaccine, washing hands frequently, breathing techniques, oxygen, herbal concoction, etc. With the influence of these terms, being lay citizens and researchers of L2, the authors of this paper attempt to compare these C-19 precautious measures with teaching of English during this pandemic phase. In order to boost the immunity of L2 teaching and learning through online, Multiple Intelligences (MI) theory of Gardner would be of great aid. Multiple Intelligences theory focuses on the significance of the unique intelligences of the learners. Gardner proposed his array of intelligences namely, linguistic, logical-mathematical, visual-spatial, musical, interpersonal, intrapersonal, bodily-kinesthetic, naturalistic, and existential intelligences. Individualized instruction develops academic and mental health of learners. Hence, this paper aims to outline the COVID-19 ELT guidelines, which could serve as an aegis to teach English language with the succor of MI. This pedagogical proffer will perk the L2 teachers and learners to fabricate an effective web by emblazoning the Individual Differences of learners during this pandemic learning.
Pandemic-driven Educational Research: Plotagon

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The present study aims to explore how to facilitate the teaching of appropriate body language, and accent required while communicating with others to technical students in the subject of English Communication Lab. For making English Formal Conversation easier and interesting for the students in virtual English labs, the researcher has used Plotagon app.

As an instructor while taking virtual English labs, the researcher has exploited the resources available in the Plotagon app so that videos can be created by the teachers in few minutes even on their android devices. Thus, the study reports the experience and significant observations made by the researcher in the virtual class.


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Online classes become a necessity during the lockdown period caused by the Corona virus (COVID-19) pandemic. In line to this, the purpose of the present study was to examine the influence of quality of online classes on students’ satisfaction and loyalty. Further the study examined the mediating role of active participation of students between online classes and students’ satisfaction. Finally the study examined the mediating role of students’ satisfaction between online classes and students loyalty. The primary data is collected from the students pursuing post graduate programs in the higher educational institutions operating in J&K, UT through an online survey. The study results showed that online classes and students’ participation positively affect students’ satisfaction. Students’ participation established as a partial mediator between online classes and student satisfaction with 0.393 Variance Accounted For (VAF). In addition to this students’ participation established as a full mediator between online classes and students’ loyalty with 0.96 VAF. The study is conducted from students’ perspective during the lockdown period. The study highlights the important aspect i.e. students participation and students satisfaction that need to be focused to make online teaching-learning more effective and achieve students loyalty. The present study will be useful for the administrators, policy makers, teachers and students for executing effective teaching-learning system. As per the literature review, it had been found that there was a dearth of literature on the influence of digital classrooms on students’ satisfaction during the lockdown period. Students pursuing post graduate programs are selected as respondents further students at all levels of educational institutions can be studied.
Developing Soft Skills in Engineering Students with COVID-19 Pandemic: Challenges and Limitations of Digital Classes

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Developing soft skills in engineering students has always been the demand in all academic institutions, for their best placements and to sustain in big organizations with best professional skills it is always a benchmark set by all engineering institutes. Inclusion of rigorous training sessions and teaching made this quit an achievable target but COVID19 pandemic brought a situation where day to day life was challenged and world had faced crises which was not seen in 100 years. On one hand it was difficult to understand and predict how things will develop and suddenly we had no longer control on our lives. In such situation to continue higher education, promote students, conduct practical classes and justify evaluation was a big challenge for engineering colleges and institutes as all these learning centers were closed. An immediate and effective response to this crisis was digital or online learning. This paper aims to enlist ways of developing soft skills of engineering graduates above and beyond all the COVID19 challenges and limitations of online classes with the intentions of making engineering graduates industry ready band viable to work in reputed firms.

Analysis of the Challenges in Online Teaching and Assessment of Foreign Language

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The contemporary era and the current pandemic situation of COVID-19 obliged the use of advanced and digital technologies to assist teaching and learning, making online education effective, convenient, and an alternative to conventional classroom practices. There has been a radical change in teaching-learning due to complete digitization. The unmatched levels of digitization in education have led to various pedagogical and logistical reforms and changes; as a result, evaluation has been affected. The online assessment is not an effective tool to gauge the actual knowledge in the student's language learning. This research paper aims to examine the issue of online assessment of the knowledge of students. The empirical method has been used to analyze the scores of online assessments based on the four language learning competencies, namely listening, speaking, reading, and writing. It has been observed that in online classes, the class's strength should be restricted to make the teaching and learning more effective.
The Role of Online University Teaching and Learning During COVID-19 Pandemic

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Amidst the worldwide prevalence of the COVID-19 pandemic since March 2020 there has been an abrupt transition to online teaching and learning. Among students of various age groups, students pursuing university education have been one some of the most drastically affected by this sudden change. Responding to this critical predicament adapting completely and rapidly to online education that ensures effective learning, has been the need of the hour. It is imperative to also investigate the ways in which Information and Communication Technologies affect the learners, teachers and supporting staff members during the locked out of COVID-19. This paper proposes to evaluate the challenges faced by instructors across universities in India. Through this exploratory research, an attempt will be made to understand through an exhaustive literature review, the measures that have been deployed to overcome the challenges that hamper effective learning among University students and online pedagogies. The paper concludes with insights to focus on students’ experiences of learning online. As a part of this prescriptive research, it also aims to propose effective best practices of teaching and learning as well as pedagogical innovations that can improve distance education.

Effectiveness of Spoken Tutorial Method in Software Training

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The objective of the research work is to find the effectiveness of the training programs conducted to enhance software competency by IIS Deemed to be University in collaboration with IIT Bombay Spoken Tutorial Project during pandemic as a part of National Series on Student Development Programme. The descriptive research design was used and a survey was used to take feedback of participants and 52 participants gave feedback. In the 3 courses offered Python had maximum respondents followed by Latex and R Programming. Without considering completion rate all teaching components were 91% effective at 0.01 level of significance and 88% effective at 0.05 level of significance. However on considering course completion rates the percentage effectiveness of all teaching components falls to 51% and 48% at 0.01 and 0.05 level of significance. Based on respondent feedback it was found that the reflective level of attainment was low but spoken tutorial was as stated by 75% of the respondents. Without measuring the effectiveness of any training program the Deming Cycle of Plan, Do, Check and Act is incomplete and continuous improvement is impossible without taking feedback. Hence measuring effectiveness by taking feedback of participants is essential.

The study is for measuring effectiveness of Spoken Tutorial Method using expectations met, learning outcomes achieved and teaching component effectiveness. 63% respondents approved the idea of Healthchecker introduction to check the compatibility of software to be learned with the learner computer processor and operating system. The study highlights some reasons for shortfall in effectiveness of the Spoken Tutorial Method.
The Impact of Online Teaching on Self-Monitoring of the Academicians during the COVID-19 Pandemic

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This research aims to study the association between the self-monitoring of the academicians during the COVID 19 period due to the online mode of teaching with the help of the technology acceptance model (TAM) model. This study will additionally throw some light on the challenges faculty members face while teaching online. Primary data was collected from the faculty of Business Schools to measure the self-monitoring of the academicians and the relationship of the factors by using the TAM model during the pandemic of COVID 19. In order to study this relationship, a multiple regression was adopted to study the correlation amongst the elements in the TAM model and academicians' self-monitoring. A few qualitative and exploratory questions additionally examined online mode of teaching during the COVID 19 pandemic associated to the challenges faced while teaching online. The research findings comprised a lack of IT support, no physical interaction, and no effective communication among the faculty members and the students. Other findings also included engaging and motivating students to participate in class discussions. Some issues included the faculty's level of self-monitoring in utilizing technology to impart online and monitoring their actions while teaching.

Flow Learning Experience in Online Learning by Integrated Course Design

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Learner engagement is critical for the success of teaching learning processes. It has become challenging in online learning. With a sudden increase in online learning after COVID 19, many institutions and teachers had to face several challenges and one significant challenge remains to be learner engagement leading to significant learning experiences which are in flow state. Irrespective of the mode of learning, flow learning experiences are achievable by using integrated course design methodology. This work explores integrated course design experience of a first-degree course offered in an online learning mode. It highlights several features of the course based on the integrated course design methodology that made it engaging and the learning significant. Evidence of engagement are analysed and conclusions drawn about the elements of learning experience that were impactful. Study showed that integrated course design is one method which can be used by teachers for creating flow learning experiences in online learning as well.
Conducting fair and effective assessment continues to be one of the toughest challenges in the online mode of teaching and learning. Within that context, it is probably fair to ask the question - is finding technological solutions enough to tackle the challenges related to online assessment? We contend that we need to look a little deeper into the psychological, philosophical, and social foundations linked to educational malpractice and other interrelated problems of online evaluation. With that in mind, the paper critically analyses the practice of unfair means in online assessments. First, the philosophical and moral standing of malpractices like cheating being inherently immoral activity in the educational setup is examined. Second, taking a cue from internet games and other online competitive sports, the unintentional ‘gamification’ of educational assessment and the resultant consequences has been explored. Then the issue been studied within the social context of hyper-competition. The competitive atmosphere of ‘learning for success’ supported by the Darwinian theory of ‘Survival of the fittest’ imbibes fear - the fear of failure, the fear of losing, the fear of being unfit for success, and so on. Naturally, such a social structure encourages winning at any cost, including malpractices. Thus, the paper argues that apart from finding need-based solutions to the problem of malpractice, the social, psychological, and philosophical exploration of the phenomenon provide deeper insight and help in finding a better solution or alternatives to existing solutions. An anonymous survey of students at the authors’ institution was conducted and the data has been critically analysed to throw light at some of the issues discussed in the paper.
EDUCATION AND INDUSTRY LINKAGE
Skill Gap Analysis from Student and Employer Perspective: A Study from India and UAE

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India with a 1,380 billion population has only 4.6% of the workforce that is formally trained and only 45.6% of the fresh graduates who are employable, according to the India skill report (2019). Interestingly, National Employability Report for Engineers (2019) by Aspiring Minds revealed that 80% of fresh engineers are not employable. On the contrary, the Manpower group talent shortage report (2020) discovered that 63% of companies surveyed by them had reported skill shortages. The major shortage exists not only in the technical skills but also in the techno-commercial skills, soft skills, corporate language skills, and collaborative working skills. This research paper tries to ascertain the causes of this problem and intends to suggest a framework that can help in imparting education and training to the students, that is more aligned with the industry needs. The study has been done through focus group discussions with the industry leaders, the policymakers, the scientists, and the representatives of the educational institutions. The nature of questions asked in the focus group discussions varied slightly with each of these four categories of respondents. The study is undertaken in India and UAE. Both primary and secondary data have been collected for analysis. A survey has been collected to get primary data from the students, the Industry Leaders, and the HR/recruiting agencies. Secondary data is collected from the related journals, magazines, reports, the internet, and other documents. The principal component analysis has been applied to classify the skills required under broad categories, and the hypothesis regarding the skill gap has been tested from the job seeker’s as well as recruiter’s perspective. The paper also gives some interesting examples of a variety of ways in which several institutions or governments have tried to address this issue in India and other nations of the World.

Changing facets of Management Education: Bridging Gap Between Industry - Academia

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Management education is roundly criticized today for fragmentation and atomization of subject matters and overemphasis on analysis at the expense of skills related to managing and leading. The biggest challenge of the management institutions is to produce efficient managers. In order to maximize the opportunities for development of management education for students, globalization, localization, and individualisation in education are important and necessary. The major issues include how to develop research focused institutions, career focused institutions and foundation institutions in India to serve the society at large. Developing good governance and regulatory framework in management education is the biggest challenge in India. There is acute demand of managerial talent that is equipped with new-age capabilities and skills. The development of effective managers and good management practices begins with proper education and training. Innovative teaching strategies are needed in management education to more effectively engage students in the classroom. This paper critically review the present a set of innovative pedagogical approaches that have the potential to guide teaching and transform learning. The research methodology is based on naturalistic observational research which includes participatory observation and on the
experiences of the authors of the development process, which has taken place B-School during the last decade. Focusing on the development of the integrated framework of innovation pedagogy, it helps to understand how education development takes place gradually and how it can simultaneously aim to respond to the demands of a sustainable future.

**Development of Linkage Between Agriculture Industries and Technical Institutions (AITIL): A Step Towards Implementation of NEP 2020**

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In this paper, various aspects about development of interaction between technical institutions and agriculture industry are presented. Agriculture sector is a backbone of Indian economy and becoming contributing industry in national growth. Under National education policy NEP 2020, technical institutions needed to promote research and innovation across all disciplines. Certainly, technical institutions are engaged to cater the needs of process and manufacturing industries at National and International level. It is an alarming situation that technical institutions and technical manpower to move towards agriculture and agribusiness for Atmanirbhar Bharat. Agriculture and Farming is a kind of industry and farmer is an Agripreneur to whom technical institutions have to develop a linkage through different aspects. This paper emphasizes different aspects to be implemented by technical institutions to enhance agriculture growth.

**Experiential Learning based Service-Learning Pedagogy for Civic Engagement of Pre-service Teachers**

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The present Education around the globe seeks to address the issue of students’ lack of civic engagement which can have potentially devastating effects on society. Service learning is a form of experiential education in which students engage in activities that address human and community needs together with structured opportunities for reflection designed to achieve desired learning outcomes. This study aimed to use a transformative pedagogy that linked classroom with the real world, the cognitive with the affective, and theory with practice. It was the deliberate integration of Service Learning into academic learning and student development and a growing commitment to civic engagement. This enabled the prospective teachers to use Service-Learning as a pedagogical tool in the essential moral and civic obligations of teaching, fostering life-long civic engagement, adapting to the needs of the learners with diverse and special needs, and a commitment to advocate for social justice for children and families. This experimental study consisted of two group post-tests only design involving 64 pre service teachers as the sample. A self-designed Civic engagement scale was administered to collect the data. The experimental duration was of 4 months covering one semester. The Post-test results indicated significant difference in the Civic engagement of Pre service Teachers. The Pre-service teachers exposed to Service-learning Pedagogy had significantly higher Civic engagement compared to the group that was not exposed. The study has implications for teachers at all levels of education to adopt service-learning pedagogy to ensure civic engagement, as service to humanity should be the ultimate purpose of Education.
Impact of Flipped Classroom on Student Engagement

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BITS, Pilani conducts Work Integrated Learning Programmes (WILP) as a means of continuing education for employed professionals. The mode of instruction is either face to face or online. We conduct lectures via both regular mode (comprising 16 sessions each of two hours) and flipped mode (comprising 11 sessions each of two hours). In the regular mode, the instructor delivers lectures during class hours and students are assigned homework problems and other assignments to do at home. In the flipped mode, students are expected to watch pre-recorded videos, i.e., digitized content at home, and then come to the classroom with an understanding of basic concepts. In the classroom the instructor will review important concepts and advanced topics as well as clarify doubts. They will also focus on application of concepts via problem solving and experiential learning such as excel modelling, case study discussions and simulation. This is the reverse of the traditional approach of introducing new concepts in the classroom and assigning homework problems and projects to be done by the students at home. The present study has found that flipped classroom model has a positive impact on student engagement as compared to traditional classroom model.
NEW TECHNOLOGIES AND EDUCATION
Extended Reality for Enhanced Learning beyond the Classroom: Three Pandemic-Proof Prototypes

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Spatial Computing technologies, such as eXtended Reality (XR), are being increasingly explored for training and learning scenarios across industries and educational institutions. The trend of online learning and cyber-physical campuses has become the norm since the year 2020 due to worldwide lockdowns imposed on learners. The current model of remote learning is often limited to text and audio/video conference-based learning. This has significantly affected the multimodal learning necessary to learn formative concepts in courses requiring physical presence. XR solves this problem by blending visual, auditory, reading, writing, and kinaesthetic modes of learning in a shared three-dimensional space using desktops, phones, and virtual/mixed reality headsets. However, the use of XR for teaching and learning is still at a nascent stage. This work presents three different XR prototypes used in a university and industry setting for teaching programming and cyber-physical security.

RobotAR is a Computer Science education tool where a virtual robot can be programmed to move about using augmented reality technology. Learners use Python to program the robot’s actuators and receive information from the robot’s sensors. The application was used to teach computational thinking, Python programming, and higher-level computer science topics such as object-oriented programming and state machines at a university.

PlantVR and PlantAR are mixed reality applications to visualize the security, safety, and operations of Critical Cyber-Physical Systems such as a city’s water treatment plant. They visualize cyberattacks, the resulting process anomalies, and whether or not the anomaly is detected. The learner is connected to an actual, operational water treatment plant. This opens up the physical plant for remote worldwide collaboration and telepresence. The educator can come up with numerous attack/defence scenarios and serious gamified challenges for training and education.

We explore the efficacy, challenges, and opportunities of XR technologies for remote learning in this paper.

Outcome Based Learning: An Overview

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Outcome is a concluding demonstration of learning; it is what the student should be able to do at the end of the course. Outcome-Based Education (OBE) is an approach in which the decisions about the curriculum are driven by the exit learning outcomes. OBE is being recognized as the most important educational component of societies with knowledge-based economy. OBE designed to achieve the predefined learning outcomes. OBE starts with a clear picture of what a student should be able to do, design the curriculum, teaching-learning process and assessment to ensure that the outcomes are attained. OBE model facilitates Continuous Quality Improvement (CQI). In other words, in OBE system teachers act as facilitators and focus on students to attain the knowledge, skills and personalities that will make them to achieve the intended outcomes.

In characteristics of OBE, Programme outcomes address Knowledge, Skills and Attitudes to be attained by students. Course outcomes satisfy the stated programme outcomes likewise Lesson Learning Outcomes satisfy the course learning outcome. Learning outcomes are intentional and assessed using suitable
performance indicators. OBE based courses produce qualities in the graduates, students are well informed and trained of the skills required out of them.

Knowledge and understanding, cognitive skills, Functional work skills, Personal and entrepreneurial skills, Ethics and professionalism are some of the attribute’s students attain at end of the programme. Integrated learning of courses is an important curriculum concept. Using bloom taxonomy for appropriate verb according to difficulty level is of prime importance when designing the assessment strategy. Formative assessment with feedback mechanisms is crucial in continuous improvement of the student. Formative and summative assessments are an integral part of learning process.

Communication is the Universal Solvent: Usability Study on Atreya Bot - An Interactive Bot for Chemical Scientists

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Conversational agents are a recent trend in human-computer interaction, deployed in multi-disciplinary applications to assist the users. In this paper, we introduce "Atreya", an interactive bot for chemistry enthusiasts, researchers, and students to study the ChEMBL database. Atreya is hosted by Telegram, a popular cloud-based instant messaging application. The main objective of the paper is to explore the potential of using a conversational agent to assist chemistry students and chemical scientists in complex information-seeking processes. This user-friendly Atreya bot queries the ChEMBL database, retrieves the drug details for a particular disease, targets associated with that drug, etc. The usability form was filled up after searches were performed on the Atreya Bot. The scores are then calculated, and analysis was performed by all 2 standard usability metrics – SUS (System Usability Scale) and CUQ (Chatbot Usability Questionnaire). These questionnaires, help us to measure attributes such as usability, attractiveness, efficiency, and stimulation provided by the Bot. We found significant positive results of all two metrics which mainly emphasize that the Atreya bot is easy to use as the various functions in this system are well integrated.

Impact of Online Education in The Development of Life Skills of Students

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The COVID-19 has makes tremendous changes in education system because of all educational institutions were shut all across the world. As a result, education has changed dramatically, e learning and online education was play a key role in education system. Intelligent technologies make the new education system more attractive and student friendly. The purpose of education is the overall development of students. The life skill helps to deal effectively with the demands and challenges of life. The purpose of this study was to assess the impact of online education in the development of the life skills of students. This study collected more than 986 data from students who uses online method only for education during the COVID crisis. The findings of this study indicate that a sudden switch to a pure online alternative changes there life skill also.
COVID-19 Pandemic: New Technologies and Challenges to Online Education

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The COVID-19 pandemic attracted the attention of the government since March, 2020. The government concrete measures came in the form of lock down i.e. 24th March, 2020, led to closure of Schools, Colleges and Universities both in private and government sector.

Against the increasing risk and spreading of the pandemic causing deaths, there was a shift from physical classes to online classes in the education sector. Whether school, colleges and Universities, online classes have become the norm. There has been a shift from blackboard classes, direct face to face interaction to fruitful discussions via zoom, skype, WhatsApp, Cisco Webex, Google meet. With the shift towards digitalization, initially, there was paucity of expertise on online teaching. But with workshops, adequate skill training and institutional support, such challenges have been overcome for rapid digital learning. The other factors required to take the advantage of online education are strong broadband connectivity, smart phone, owning a laptop, computer skills and technical knowledge and in a position to afford the data cost. Over time, it was found that not every student could afford a smart phone and hence the student was forced to rely on recorded sessions and videos. There had been new modes of exam which have been challenging for both teachers and students, and issues such as uncertainty of bandwidth always tend to prevail. Also, many students find the longer hours of online classes burdensome. Students located in the rural areas fail to join classes due to their location and connectivity problem. Against this backdrop, the study intends to look into the advantages, and challenges associated with use of digital technology and problems in online education. Using primary data, questionnaires had been formulated. Table will be used to show the result of the primary survey. The findings of the study will discuss the challenges faced while using the digital technology.

Virtual Accreditations PRT Visits – A New Normal in Accreditation World

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This research aims to depict the key challenges and opportunities in conducting virtual accreditation visits. Virtual accreditation visits have now become a new normal in the accreditation world. The accreditation agencies adapted to the changing circumstances to survive (Bryant, 2020). The business schools were exposed to a new but difficult experience. The virtual visits pose a new set of challenges to the business schools and the PRT teams of the accreditation agencies. The key challenges in the virtual accreditation may be analogous to the eLearnings, telemedicine, online education, online consultations, etc. We conducted a review of the literature drawing upon the literature from technology, online education, telemedicine etc.

We developed a detailed framework based on content analysis and the unstructured interviews of a few accreditation subject matter experts. The framework presents a set of key drivers critical to the success of a virtual accreditation visit for the business schools. We used the key respondent technique to collect our data.
The expert responses were classified in challenges and opportunities. All the responses related to challenges were analysed using Nvivo word-cloud and the frequency of occurrence of the various keywords. We filtered the undesired keywords from the analysis for validity of the findings. The paper makes an academic contribution to the literature of quality control, educational learning and development, and virtual operations. The research has significant practice implications towards improved planning and better coordination. The findings of this research is expected to bring synergy between the education authorities and accreditation agencies. The findings would also encourage the policy makers and practitioners to look into the opportunities of cost and time savings, environmental protection by reducing the travelling, fuel, paper printing. We close the paper with limitations and further scope of this research.

Evaluation and Management of Language and Technology Literacy Barriers for Accessing E-Learning Services in India

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Language and technology literacy barriers to access E-learning services have been a topic of interest for the last two decades. The paper intends to explain how language and technology literacy are creating obstacles for students and teachers in India. The paper presents research aimed at overcoming obstruction to citizens’ capability to access the E-learning services. Especially in the context of a multi-lingual country like India, these issues must be researched well for better service delivery. Cost-effective and readily accessible technology and electronic devices have broadened the scope of facilities for the citizens of India. Several parameters like socio-economic conditions, economic status, and access to internet facilities have been considered to analyze the data. Lack of understanding of foreign language and technology has created huge differences among the students and generating misconceptions about the services. National Education Policy taken by GOI in 2020 has focused to remove the language and technology literacy barrier between students and educators by popularizing language education.

Implication of Natural language processing (NLP) advancements in other languages have become pertinent as technology benefits non-English speaking communities and businesses can develop localized applications to reach customers in their preferred languages. Ways to manage the discriminating factors are the major objectives of this research.
To Investigate the Key Antecedents of the Acceptance of Accreditations in Business Schools

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Accreditations have picked up fast in America, Europe and Australia. The American accreditation agency AACSB has wider presence in the USA, whereas the European based EQUIS and AMBA has wider presence in Europe. The Australian schools have presence of all in almost equal numbers. The developing economies of South Asia has significantly less presence of these international accreditation agencies in comparison with the USA, Europe, and Australia. The objective of this paper is to develop an initial comprehensive framework, which can facilitate to investigate the important drivers of adoption of international accreditations in developing countries. The potential drivers may range from the origin of the accreditation agency to the real value addition by them to a business school. We find evidence that the density of the accreditation in a country has positive association with the origin country of the accreditation agency. There can be further facilitators and inhibitors to the acceptance of international accreditations. The accreditations can be viewed as types of organizational innovations. The facilitators and inhibitors of the adoption were the institute’s vision and mission, faculty engagement, infrastructure, technology, budgets. The employees of lower income and small size institutes perceive the outcomes and factors of adoption of accreditations more than higher income and large size institutes. The proposed framework for the adoption of accreditation is generic and comprehensive. It would help academic scholars to conduct research on accreditations and enhance the knowledge of learning and education literature. The knowledge generated from this research will encourage the Indian education to adopt the national and international accreditation. This is in turn will lead to an improvement in the quality of education, which would lead to a better society with responsible citizens.

Education of Generation Z: A Systematic Review and Research Directions

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The purpose of this paper is to gain an understanding of existing research and debate regarding the requirements expectations and attitudes of Education for Generation Z using the technique of Systematic Literature Review. Review has been done by systematically collecting the existing literature between 2003 and 2020. The literature is categorised according to Geographical Distribution and types of studies undertaken. Literature is also categorised based on the type of study. A disciplined screening process resulted in forty-one relevant research papers appropriate for the study. As these papers explain the emerging trends in the discipline since 2003, it can serve as a base for researchers who wish to conduct meta-analysis about Generation Z. It would also enable to establish a framework for further empirical research. Due to the vast nature of topics related to the education of Generation Z, it is not possible to study the entire discipline in a single study. Hence the study only focuses on relevant and emerging trends about education for Generation Z. The study aims to fill the gap of unavailability of a structured systematic literature review in the domain of education of Generation Z. This serves as an important source of information for academicians, practitioners. The study postulates new avenues for future research. The study contributes to the methodology for conducting Systematic Literature. Reviews in the field of teaching and learning, specifically for the education of Generation Z. It highlights an effective method for mapping out thematically and viewing holistically emerging research trends.
Next Generation Tools, Technologies and Aesthetics for Effective Online Teaching and Remote Learning: An Engineering Faculty Perspective

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Online teaching and remote learning (OTRL) became more or less inevitable in the current scenario due to the corona pandemic. OTRL could be more productive using next-generation software and hardware tools, information, communication, and automation technologies (ICAT). In addition to the intelligent devices and ICAT, the incorporation of aesthetics such as poetry, art, and animation in teaching complex concepts and algorithms, could potentially enhance the beauty of OTRL. In this study, the author presents several useful next-generation tools and ICAT for efficient OTRL. The author also shows interesting examples of using aesthetics in teaching specific engineering courses. Some of these tools include smartphone applications (apps), intelligent devices for experiment demonstrations, google tools, and others such as canvas, piazza. The use of these tools and technologies will certainly deliver better teaching and learning experience. However, the author finds them more useful for selected courses and concepts in engineering. The amalgamation of traditional approaches and selective and intelligent usage of state-of-the-art tools will lead to effective OTRL. Furthermore, using these tools, techniques, and practices, sciences and engineering faculty can quickly and smartly teach online and motivate students to learn better and wiser remotely.

The Way Forward to the Post Pandemic Evolving Education Ecosystem– An Institutional Theory Perspective

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With COVID waves continuing, the imagination of a pure classroom program is waning in developing countries. It is prevailing that online education is here to stay. There are, however, challenges to be overcome before online education becomes a part of mainstream offering without compromising on the learning possible through a classroom program or reducing its business value proposition. This study attempts to understand the numerous challenges, benefits and perspectives of online education and their effect on the perception of parents to view online education as a mainstream offering. The conceptual frameworks are grounded in the institutional theory perspective. The study juxtaposes this with parent's idea of a school education that exists in their mind and tries to explore the possibility of the emergence of a hybrid system that tries to mix the best of both worlds. The study will propose a few conceptual frameworks and propositions. These frameworks and propositions can be explored by future scholars. The study was conducted using a perception survey instrument to collect the primary data from the potential parents. Currently, this survey was conducted on 50 respondents (initial set) which we plan to extend on a wider mass. We have checked a set of hypotheses and tested them on the initial set using multi-variate analysis. We plan to use structural equation modelling to discover the underlying relationships. The final research findings are expected to report different factors the parent's value in the education system as well as the characteristics of a future and possibly blended education system to offer more benefits than either of online or face to face system can offer in isolation. Finally, the study contributes to the existing scholarly management frameworks to offer insights into the value ed-tech companies can work for each other's benefit while imparting even greater impact to the students learning, value for money to parents, and producing responsible citizens. The study contributes to the literature of learning and education discipline. The child's adaptability and teacher's ability were found to be the key to the online education success.
A Survey on the Effectiveness of Innovative Teaching-Learning Methods Adopted by Academicians

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To bring the best out of a student, it is just not enough to be a knowledgeable teacher, one should be even creative and innovative in this 21st Century. Students throw different types of challenges to teachers in the classroom. So, it becomes inevitable for teachers to think beyond textbooks to engage the learners in the classroom and make them understand the concepts. An attempt was made with this study to know the innovative ideas and tools by current generation teachers to make the learning effective, this study also tries to examine the challenges faced by teachers by the digital technology. This research is based on the assumption that innovative tools and ideas make learning effective at all levels of teaching including male and female faculty and private and government employees. A survey was done with Self-administrated questionnaire circulated through Google forms among teachers from across India. A sample of 150 teachers from School to higher level have participated in this study. Statistical analysis of the data was done using SPSS version 25. Frequency analysis was done for demographic and nominal scale response variables. The chi-square goodness-of-fit test was used to evaluate the frequency data for nominal variables were equally present or not. The results are found to be significant in favour of innovative teaching makes learning effective. The analysis shows that the use of innovative teaching is more in private sector, among School teachers and undergraduate faculty, overall positive response from all the participants was observed. The study concludes that there is a need for a change not only in the curriculum design, but also the teaching methods, which needs to be more interactive and engaging. Teachers must upgrade their knowledge on technology to become innovative and meet the needs of this generation students.

Exploring Opportunities of Engaging Students Through Technology Driven English Classroom

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Technology has opened new vistas of teaching-learning process. Although, language educators have been frequently using various visual aids as tools to make learning interesting, but this covid scenario has given us an opportunity to explore and share different technological tools/online platforms to make the process even more fascinating. Language teaching has become an ever-evolving domain, wherein language teachers have to keep searching for new and interactive ways. One such scenario is finding excellence while exploring new dimension of teaching-learning process through integration of tech-tools. Integrating innovative technological tools in the teaching process makes the task of the facilitator lot easier as well as makes the session fun and creative for the learners.

This paper aims to provide an insight on the use of technological tools and innovative methods to make language classroom more interesting and participative not only for students but also for teachers while integrating numerous tech-driven activities during the learning process. It aims to achieve functional proficiency in the language while improving grammar, vocabulary, diction and skill sets of learners. This paper attempts to explore opportunities to engage students by using innovative ways and technological tools and methodologies for language teaching among the language teachers. To reach the desired conclusion the researcher has adopted observational study approach to analyze the learners’ response and involvement in the process.
Online Learning and Academic Performance: Mapping Literature Through Bibliometric Analysis

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In the present era, amidst the pandemic, several challenges have been thrown upon the community. The academic fraternity has also been hit by this in several dimensions. Also, in the last decade, online learning had emerged but the hard-hit of the pandemic had induced a complete shift to a virtual mode of interaction. The paradigm shift to digital learning has posed some gruelling challenges (Ahn, 2020). Henceforth, paramount research is required in this area. It has become pertinent to understand the outcomes and challenges associated with it. The current study has been conducted using the PRISMA framework approach. The database employed to gather literature Review is Web of science. The primary and secondary keywords were utilized to search the relevant documents and suitable filters were incorporated to refine the search. For relevancy check, the research papers were scanned to ensure the appropriateness of the subject matter under study. The relevant research documents were capitulated from WOS and results were captured using Biblioshiny software. The most relevant keywords were identified through the author keyword and keyword plus. The most relevant authors were found Hwang Gj, Linch. The most relevant journal on the basis of the H Index was found to be “computers and education” with H Index 37. The word growth shows a cumulative increase in the occurrence of the keywords over the years. The data indicated the trend topics which were related to online learning, flipped classrooms, and the challenges faced in online learning setup. The present study is to bridge the gap by providing the relevant literature and impart themes for future research.

Design of Remote Labs for Continuing Education Students in Engineering Domain

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Problem solving is the key skill expected in any industry, particularly, in continuing learning related to engineering and technology. In fact, application of theory is the foundation for problem solving. Therefore, there can be two opportunities for the continuing education student to learn the skill either in their workplace or in a laboratory setup. Both have their own limitations. In industry, the study needs to stop production and conduct the trials requiring lot of time and has financial implications. Whereas the physical laboratory requires physical presence of the student and the faculty. It limits the utilization of physical laboratory and reduces the student’s flexibility in terms of time and space. Remote labs can ease these concerns by using sophisticated technology. This setup helps by connecting the distant physical system through IoT (Internet of things) with students. It provides similar experience of physical lab to the students, but in a controlled environment distant with simplistic scenarios. Virtual labs will enable the student to conduct trails in extreme environment without harming the infrastructure. This improves the student application learning beyond the box. Considering these factors, Birla Institute of Technology and Science Pilani- Work Integrated Learning Programmes (WILP) has developed and offered remote labs and virtual labs for their WILP students across engineering domains. The research work has focused on demonstration of the establishment of one remote lab in engineering domain highlighting design and development of Fluid Mechanics and Machines lab. The study includes IT infrastructure, physical infrastructure and instructional strategy deployed in the lab. It also presents the statistics with respect to number of experiments performed, assessment and feedback by the students.
A Study on Effectiveness of Interactive Tools in Online Teaching-Learning Process

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In the present context of pandemic situation when everything is tried to mobilize their entity through virtual platform academics is also not an exception. However, it is a serious concern for instructors as well as learners to maintain effective teaching-learning method and the active participation virtually. For the students it is difficult to manage the same level of interest in all the classes throughout a day. Everyone is in search for efficient techniques to enrich the online teaching. Apart from using regular teaching methods like delivering online lectures, sharing study materials, there are some procedures available which can increase the number of active participations in online classes. Different tools related to educational technology are available online for this purpose. Research is going on throughout the world to introduce more variety in this field. A case study has been organized to observe the effectiveness of the online tools where the learners are asked to use those tools during the online lecture. The study has been conducted on a class having 120 students in different phases to identify the active class participation of the learners. R-Studio has been utilized to conduct the statistical analysis. It has been found from the study that extensive use of online tool positively correlates with the number of active learners. With reference to the class performance, it was also found that proper use of online tools enhanced the overall class performance. This study has been analyzed also with every stage of Bloom’s Taxonomy (1956) and revised Bloom’s Taxonomy. Focus was kept on different grades of difficulties to represent the Bloom’s pyramid properly. Overall results shows that use of online tools in class improves the active participation, develop students’ interest in study materials, positive attitude, inquisitiveness towards learning as well as students’ exam performance.

Effective Online Teaching and Learning for Adolescents: Innovations and Challenges

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The part of training in a person's self-improvement, expertise advancement and majority rule mindful conduct accordingly contributing gigantically to the general success of a country, is evident. With section of time, the training framework everywhere on the world has gone through an emotional change. The customary training framework no longer satisfies the cutting-edge complex necessities where everything is dynamic and advancing at an exceptionally high speed. There is an immense measure of change that happens in the current world in each nanosecond. In this way, another and present-day method of training is needed to deal with such change emerging because of production of enormous measure of data in an orderly way. Accordingly, to determine the inadequacies of the customary schooling framework, the world is moving towards computerized instruction which addresses every one of the issues and difficulties of customary instruction. Computerized Education can be characterized as the utilization of a mix of innovation, advanced substance and guidance in the instruction framework to make it more successful and proficient than the conventional training framework. Through exploratory study, an endeavor has been made to talk about the different advanced apparatuses for instructing and learning reason, the difficulties and forthcoming patterns in computerized training framework that will shape the fate of our coming ages to improve things.
Pandemic-Driven Online Teaching of English Language and Literature in Rural Areas: Problems and Remedies

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Teachers as well as students who were /are teaching learning through traditional mode till date are afraid of the sudden shift to online education, and increased demands to maintain excellence in e-learning environments. Due to the COVID-19 pandemic, there is no alternative for us to opt online mode till the normalcy. When the normalcy will restore is not certain! The restrictions like lockdown and social distancing are not allowing us to go colleges and universities only that is reality. As this pandemic has imposed on us the need to redefine our lifestyle, it has also imposed on us to redefine our resources and modes of our educational deliveries. Now onward, even though we are not interested, we have not only need to think about online teaching-learning but also have to be well equipped, well versed in different online tools, techniques and resources as there is no alternative. As regards English teachers, their roles are not confined now to a hard task master but they are expected to be facilitator, trainer, counsellor, manager and guide. We have to change this chaotic situation into an opportunity. This paper, the focus is given on understanding pandemic-driven online teaching of English language and literature in rural areas and its problems and remedies through a questionnaire based online survey of 618 students and teacher from 20 different states of India. The analysis of 618 collected responses confirm that rural students have more challenges while adopting digital media as a learning tool than urban students. As a result, efforts should be made to improve online teaching-learning by providing students with hands-on experience. Above all, it is a dire need to accept online instruction by differentiating between ‘regular online/distance mode teaching-learning’ and ‘emergency based remote teaching-learning’ which is being adapted by us as a part of ‘Work from Home’ to cope up with Corona pandemic and 94.2% participants agreed it. The suggestions and recommendations provided herein will bring the attention of educational agencies, faculty members as well as policy makers towards the problems faced by the rural students in digital learning and will help to improve it.

New Technologies and Education: Transparent Lightboard

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BITS, Pilani conducts Work Integrated Learning Programmes (WILP) as a means of continuing education for employed professionals. WILP introduced the Transparent Lightboard in 2017 with the objective of enhancing student engagement. The “lightboard” is a transparent board that is placed between the instructor and the camera and enables the instructor to face the camera while delivering lectures. Instructor can note the key points, write equations, and draw relevant diagrams on the transparent whiteboard using a special neon marker. LEDs are placed along the edges of the “lightboard” such that it illuminates the board and makes the writing “pop out”, using a Physics principle called total internal reflection of light. The camera image is “flipped” using either a mirror or via technology, enabling instructors to make eye contact with students leading to a more engaging delivery. The lightboard makes it easy to demonstrate things and facilitates experiential learning. Initial feedback suggests that students like the enhanced level of interaction/engagement with the instructor. Our study has found that there is a positive impact of the Lightboard on student engagement.
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