Sixth International Conference on
Transformations in Engineering Education (ICTIEE 2019)

Organized by: Indo Universal Collaboration for Engineering Education (IUCEE) & Chitkara University
In Collaboration with: American Society for Engineering Education (ASEE)
International Federation of Engineering Education Societies (IFiEES) & ACM India

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few of highlights of the great systems being followed at Chitkara campuses. Tie-ups with industries like nVidia, NXP Semiconductors, Texas Instruments, ARM, Dassault systems, SAP, Wipro, Infosys and many more speaks about the stringent efforts being put in by each and every member of Chitkara University for a great overall outcome.

Chitkara remains one of the top choices for engineering aspirants in the northern part of the country every year and has been growing very fast on pan India basis so as to produce engineering professionals of the highest standards. Other than Engineering, Chitkara University also offers programs in Business management, Architecture, Health care Sciences, Mass media, Education, Pharmaceutical Sciences, Design & Animation and Nursing.
The vision of IUCEE is to improve the quality and global relevance of engineering education and research in India with related benefits to engineering educators around the world. The major focus is on faculty development, student development, curriculum development, as well as improved teaching technologies & engineering education research.

IUCEE conducts annual International Conference on Transformations in Engineering Education (ICTIEE) to connect engineering educators from all over India with leaders from across the world as well as from industry. The conference provides wonderful opportunity to the participants to share their best practices and thereby learn to transform their own institutional efforts to prepare engineering graduates who can address global challenges as well as targeted initiatives of the Indian government. ICTIEE 2019 is the 6th edition of the conference hosted at two locations sequentially. At Chikara University, Punjab ICTIEE 2019 is conducted during January 10-11, 2019.

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ICTIEE 2019 TRACKS

Track 1 – Engineering Education Research in Electronics/ Electrical Engineering and Allied Disciplines
- ESDM / IOT based start-ups and associated challenges
- Inclusion of Robotics / Mechatronics / Automation electives and advantages thereof

Track 2 – Engineering Education Research in Mechanical Engineering and Allied Fields
- Inclusion of ICT and programming courses in teaching of Mechanical Engineering
- Serious games/ gamification / game based learning to achieve complex learning outcomes

Track 3 – Engineering Education Research in Computer Sciences and Allied Fields
- Inclusion of state-of-art industry standard tools, technologies to enhance education in CSE
- Promoting Entrepreneurial culture in Service dominant job market

Track 4 – Engineering Education Research in other Engineering Disciplines

List of reviewers of ICTIEE 2019 is available towards the end.

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Track 1 – Engineering Education Research in Electronics/Electrical Engineering and Allied Disciplines

A Community Oriented Project for the Aged through Epics - "Pill Dispenser"
Aishwarya Gopakumar, Ashmitha Chandrasekaran, Kireeti Mantrala, Prithvi Raj
Hyderabad Institute of Technology and Management

This paper proposes a novel approach to provide the information automatically to patients to take their right medication at appropriate time. To defeat these issues, a novel Automatic pill Dispenser is proposed. The patient is required to press a button to get the pill and reset the alert button and to demonstrate the optimal accessibility of the pills in the container to caution the client to refill the dispenser with the required amount of pills. The significant goal is to keep the gadget simple and cost-efficient.

A Study on Different MOOC Models for Engineering Education
Gurinder Singh, Sartajvir Singh, Lipika Gupta
Chitkara University

This paper presents a comparative assessment of aforesaid MOOC models in engineering education along with their particularity, features and the foreground future scope. More specifically, this paper reports the careful use of each MOOC model to deliver the most supportive and enliven environment for students to continue exploring their potential. This paper aims to enhance engineering capabilities and provide an appropriate path for innovative use of existing technology veraciously.

Design and Implementation of Electrical Protection Scheme through Student Lead Conference (An Active Learning Tool)
Yogini Nilesh Bhosale, Arun R Thorat
Rajarambapu Institute of Technology

Students lead conferences’ is an active learning tool for the students to improve their creativity, leadership and participation skills. A set of guidelines is prepared. Students searched the society related electrical protection problems and designed solutions for the same. These designs are presented in the competition and evaluated by the examiners. Students are further motivated for simulations and hardware models. Total 42 schemes are designed. This activity not only improved the learning index of the students but also improved course attainment which is successfully mapped with program outcomes.

Distributed Cognition Considered as a Single Cognition System Among Learners
Mamatha M Nagaraj
BMS College of Engineering

Individual cognitive systems learn by performing some activities which invoke learning mechanisms. Distributed cognitive systems learn as they perform activity in a group which invoke different learning mechanisms. Distributed cognitive systems involve a set of activities that are intersection of activities of the individual cognitive systems. However, interaction between the subjects in the distributed cognitive systems also generates additional activities that cause extra cognitive mechanisms that help in additional learning. Thus, distributed cognition can be treat a group as a single cognitive system. Since the group as a whole perform a subset of activities that trigger a particular type of learning mechanism. Also, the end result of the activity is a culmination of the subset of activities that produced the result. We may also view the individual as a distributed system as the individual is involved in a set of activities that originally pertain to the individual cognitive system (his/her thought process helps him achieve a given set of activities that help him learn) as well as the range of activities dictated by the new set of activities from the group that induce new learning activities.

Electronic Digital Display Board using GSM through EPICS
Vishnu Priya, Kothamasu Bhagyasree, Chaluvadi Nikitha, Vaishnavi Rao
Hyderabad Institute of Technology and Management

Nowadays Digital LED Board is a common means of displaying a message. We find it in places like railway station, bus stand, main roads, institutions, inside the bus to display the destination etc. LED’s consume less power, gives brighter display and also easy to handle. Considering these features we opted for led module in our project. In this project we updated the led board with industrial GSM module. It is an application based project where the messages are sent by means of Wireless Communication.

Enhance the Learning of Digital Signal Processing through Implementation Assignment
Gireesha H M, Rohit Kalyani, Raghavendra M Shet, R M Banakar
KLE Technological University

This paper presents an approach adapted in digital signal processing (DSP) course for undergraduate students to understand both theoretical concepts and its applications through implementation assignments, which enable students to augment the theoretical, conceptual and analytical material provided in the DSP course to develop applications in the form of software using Python tool. This practice is useful for effective learning and to create good engineers for the future world.
Enhanced Learning Experience by Comparative Investigation of Pedagogical Approach: Flipped Classroom
Shraddha Hiremath, Nikita Patil, Nalini Iyer, Sujata S Kotabagi, Soumya Bakale, Rajeshwari Hangal, Sujata Naduvanamani, Poornima M, Jyoti Patil
KLE Technological University

It is a challenge for enabling learning environment with proper time managing strategy for bringing into action the immediate educational needs of students in the large classroom. With this objective in mind a classroom performing reverse activity has been introduced called the “FLIPPED CLASSROOM” for the most fundamental courses of the Electronics and Communication i.e., Circuit Analysis (CA), Linear Integrated Circuits (LIC) and CMOS VLSI to enhance the learning capability in provided span of time. This pedagogical method employs a reverse way of handling the course by providing video lectures and practice problems as homework assignments and group-based problem-solving activities in the classroom. This paper discusses the improvement in the learning process by using flipped mode of delivery for a course LIC for two iterations continuously. Comparative analysis of session conduction, level of questions to be posted and clarity of the concepts learnt have been performed to improvise the level of teaching, interrogatory sessions and student involvement in the classroom. The study reflected that analysis of comparison enhanced the learning level in the individual student by increasing their interaction and engagement in the classroom which resulted in a thorough understanding of the course.

Enhanced Optimization Skills in Embedded System: Integrated Learning
Preeti Pillai, Bhagyashree K., Nalini Iyer, Prabha Nissimagoudar, Rohini S H, Shrishail P
KLE Technological University

Embedded system is one of the major focus areas in Electronics and Communication Engineering supported by relevant courses and projects at multiple levels. Students are well exposed in the embedded system verticals with industry supported labs, courses as well as industry guided projects for designing real time embedded systems. As embedded systems became bigger, intelligent and complex, millions of lines of code are to be optimized to meet system deadlines, fit into the available memory, and meet power requirements to achieve the desired functionality. Developing such embedded system, to meet multiple design constraints is a considerable challenge. In order to meet this challenge code optimization techniques at multiple levels are introduced in curriculum focusing on machine dependent and independent optimizations. Architecture specific machine dependent optimization techniques are addressed at basic courses like 8051 Micro-controllers and ARM processors, while machine dependent and independent optimization techniques are addressed at advanced courses like Real Time Embedded System and Course Projects which provides integrated experience. This exposure enables our students to be prepared for industry requirements and challenges, and has resulted in increased placements in embedded industries.

Flipped Classroom: An Approach to Improve Learning Performance of Engineering Students in Digital Electronics
Amit Kumar, Shivani Malhotra, Rubina Dutta
Chitkara University

Flipped classroom is an environment which provides an active and interactive way to learn. Engineering students learn more by doing themselves or when they are involved in some activity related to their course. A study was carried on second year Electronics and Communication Engineering (ECE) students for the study of sequential circuit in digital electronics using flipped classroom. Result of study shows significant improvement in student performance.

Hardware-in-the-loop (HIL) Simulation Technique for an Automotive Electronics Course
Prabha C. Nissimagoudar
KLE Technological University

HIL simulation is part of V-design model, used for developing functionalities of automotive ECUs. This paper provides an insight into how this industry specific technology is incorporated into automotive electronics course. The course is designed to realize the functionalities of an automotive application built using model-based-design with HIL simulation approach. Outcomes are measured by industry specific rapid prototyping skills demonstrated by the students which made students industry ready.
Industry Institute Interaction for the IOT Course
K R Sudhindra
BMS College of Engineering
Internet of Things is a revolutionary technology of connecting things in smart way for various applications. IoT enables and facilitates smart cities, smart environment, smart agriculture as well as major improvements in industrial applications, security & emergency operations, health monitoring and home automation. In view of this, there is need to introduce this course at undergraduate level to prepare students to in par with industry requirement in IOT applications. In this paper we discuss how the IOT course was designed as an elective in association with Nokia India Pvt Ltf, for final year students and associated outcomes. At the end of the course students was able to apply IOT algorithms and test system implementation using different open source platforms with hardware. Students feedback about the course shows overall satisfaction about the course.

Learn by doing-Applications of Electronics – A Student Perspective
Surendra H H
BMS College of Engineering
Electronics is a domain with vibrant applications at every step of human activities. Gaining knowledge about the subject and building a product or prototype which has a certain application is a tough task for any electronic engineer. Our paper focuses on a simple methodology through which even the higher primary students will be able to learn the basic concepts of electronics and build an application. The detailed study of the paper brings clarity in the implementation of some applications which the learners have built and demonstrated themselves. This can be a very good supportive methodology which can be incorporated for better learning and understanding of electronics at different levels.

Robotics - A Practical Approach to Groom Young Minds Towards Engineering Education
Archana H R, Radha R C
BMS College of Engineering
The main intention of the paper is building awareness of engineering education in the young generation and trigger their interest to create new prototypes which addresses the problems encountered during day to day activities. With a small survey about the knowledge gain, the curriculum, the existing teaching methodologies and the inclination of the students towards the upcoming technologies we had an interaction with the students of age group 6 to 14 years and hosted a set of workshops on Robotics. This paper proves an evidence to the parents, educational institutions and the other students how to explore the hidden talents and also brings a clarity about the role of a facilitator to bring out the hidden talent of a school kid to build a prototype which can address multiple problems of the society. We have educated the students on modelling and programming aspects through the Robotics workshops. Hence they were able to improvise their hand eye co-ordination, knowledge of motor movements and logically think on the programming. This is a small attempt to signify the importance of engineering among students.

Self Study an Approach for Student Centric Learning in DSP Course
Lalitha S, Veena M B
BMS College of Engineering
Digital signal processing is one of the courses which requires student centric course delivery and evaluation in order have good foundation knowledge in signal processing field. Attempts have been done to develop the mode of course delivery and evaluation towards student focussed learning to ensure fundamental knowledge is acquired for better understanding of courses later in signal processing area. One such attempt is to introduce a self study component in curriculum pattern as L-T-P-S (Lecture-Tutorial-Practical-Selfstudy) with credits allowed for L-T-P-S. This is known as comprehensive course where theory, practicals and self study are included. This paper discusses an approach in development, implementation and evaluation of self study benefits in digital signal processing in detail. Approach uses an assignment which is an implementation of the learned principles through practicals and theory on 1-D signals(audio). Evaluation has shown that students were able to implement and demonstrate the principles of DSP. Student were happy with the practical approach as they learn and practice the DSP concepts in self learning manner by completing the assignments. The approach enables the students to gain deeper understanding of basic principles of DSP and its application in a real scenario.
Track 1 – Engineering Education Research in Electronics/ Electrical Engineering and Allied Disciplines

Simulation based Learning for Non-Integrated Course
Pushpa K K, Sanjana T, Anitha S
BMS College of Engineering

Simulation Based Learning (SBL) is a widely used technique in education system to help students or learners to understand the engineering concepts. It is a constructivist learning model that provides learners with an experience of working on an usually simplified simulated world or system. The SBL plays a vital role for non-integrated course, in which students do not undergo laboratory sessions and its mere classroom teaching instead here an effort has been made to implement Simulation based learning, adapting Alternate Assessment Tool (AAT) for the students of non-integrated course. A novel method is being introduced and implemented for these students in the course control systems at Department of ECE, BMSCE, Bangalore. This method helps students in understanding the subject in a better way than the existing manual method and also provides a platform for outcomes based education system.

Usage of Moodle to Improve Teaching Learning Process in Control System Engineering
Lekha Das, Megha Sharma
KJ Somaiya College of Engineering

In this paper authors have implemented Moodle based study to improve teaching learning process. Authors have compared results of two consecutive years and the result shows that there is significant improvement in the Course Outcomes as well as overall result of the course. It was experienced in academic year 2016-17 students find it difficult to understand the concept of time domain and frequency domain analysis. Different teaching methodologies have been incorporated in the academic year 2017-18 to make these topics understandable.

Using Google classroom for Teaching Post-Millennials: Benefits and Challenges
Lipika Gupta, Amit Monga
Chitkara University

Contemporary learners have different learning styles and are exposure to digital learning platforms. Their learning needs cannot be contended in with standard teaching styles. Teaching-learning pedagogy has to be enhanced according to the learning needs of Post-millennials. This paper presents the benefits and challenges of using Google Classroom as an active learning platform for teaching Basic Electronics to first year students. The purpose of this analysis is to explore the helpfulness of Google Classroom’s active learning activities for Basic Electronics subject and its effectiveness to understand the distinctive needs of Post-Millennial learner. Keywords: Post-Millennial, Google Classroom, learning patterns, Basic Electronics.

Virtual Labs - A Source of Inspiration for Experimental Learning
Radha R C, Archana H R
BMS College of Engineering

Learning happens through different methods. Student teacher interactions through traditional approaches are not sufficient to bring a clarity about multiple concepts of science. Earlier the teachers used supportive teaching aids like charts, models etc to bring a clarity about the subject to the students. But these mechanisms were time consuming and maintenance of charts and models is not easy. With the new technologies pitching in there are multiple software tools and computer aided simulations available for free which can be used for the benefit of the students. This paper brings in the use of one such simulation tools to bring in a better clarity among the learners. Also the concepts will not be easily forgotten by the students when they work by themselves on the simulations. They will also be able to justify the changes at different instances with variation of different input parameters.

Visible Learning - An Approach using ICT Tools
Veena M B, Lalitha S
BMS College of Engineering

Now a day’s requirement is flexibility in education area. Students give importance to co-curricular and extra-curricular activities as well as for regular curriculum. In formal way of course delivery and assessment student may miss some of the important classes in a fixed class slots. If flexibility is introduced for formal classrooms students can actively participate in other activities In this paper an attempt is made for the students to have this flexibility for the missed classes and evaluation done using different ICT tools. Approach found to be effective and visible as they have access to supporting documents and as results will be given immediately for any evaluation. In this approach flexibility is given for Course delivery by uploading recorded videos own website and evaluation conducted in fixed timings to take from any place with fixed duration and random questions.
Track 2 – Engineering Education Research in Mechanical Engineering and Allied Fields

An Approach of Project Based Learning in Post Graduate Programme in Engineering
Prashant P Revankar, Rakesh Tapaskar, Mahesh Gorawar, Rajashekhar Hosmath
KLE Technological University

Today’s engineering students have good resource accessibility to outsmart traditional teaching. In this Information Age, Project Based Learning (PBL) has evolved as a powerful knowledge imparting tool. The pedagogical switchover has gained momentum with Institutes embracing change for student delight. The work reports PBL implementation and associated changes in student learnability in Mechanical Engineering PG Programmes. The deliberations clearly revealed that PBL truly has positive fall-outs in enhancing student learnability.

Community Services to Public and Police through EPICS
Yogesh Goud, Sriramoju Akash, Sugandham Aravind, T Rahul Reddy
Hyderabad Institute of Technology and Management

Now a days, road accidents occurring due to drunk and drive are the cause of a large number of deaths worldwide. There are being many efforts made to reduce drunk and drive cases, we come up with an idea by alcohol detecting devices, which detect the % of alcohol in the specified space. So, applying this idea in vehicles can help in reducing the risk of occurring accidents. If we install alcohol detecting device in vehicles, it detects alcohol and shows the ppm level digitally. Thus the accidents occurring due to drunk and drive will reduce.

Effective Use of Microsoft Excel for Teaching Application Oriented Transportation Problems
Pratik A Patil
Rajarambapu Institute of Technology

This paper focuses on the effect of using Microsoft excel tool for solving lengthy and tedious problems in operation research course. The experimentation was done on the Transportation models, which are usually solved by modified distribution method. This method is too tedious and the learners lose the hope of getting the solution at the midst of the procedure. Thus author has assessed the students prior and after implementation of this technique and presented the results. The results were overwhelming since students were effectively using the above tool and also benefited in different ways.

Effective Utilization of Design Thinking Process to Understand and Implement the Need of Community Partner
Hemalatha Chengala, Abhijeet Kumar, Abhijeet Kumar, T Anitha Kumari
Hyderabad Institute of Technology and Management

In this paper main objective is to generate electricity through sports and it is oriented according to the need and problems of the community partner under EPICS. Our community partner was Mr. B Veera Reddy, sports in charge of HITAM College. The problem identified was about the utilization of the energy of the athletes on the field. The energy could be harvested and utilized for other activities. This Energy could be extracted and utilized for various applications including small scale energy consuming appliances. Similar phenomenon can be observed in a Football field where in, the players put in a lot of effort. This effort could be utilized for harvesting energy. This study shows how can we convert physical energy, kinetic energy into electrical energy?

Enhancing Generative Learning by Including Undefined Task in Material Testing Laboratory
Prasanna Raravi
KLE Technological University

Material Testing Laboratory is taught for 2nd year UG students. The objectives of the laboratory were well defined. The idea here is to generate a platform for their generative work. The authors modified the structure and the teaching style for the course such that the students not only engaged in the regular laboratory but also experience the real situations of industry. The idea is to create the ’Generative Learning’ process in the given environment (Osborne et al., 1983) [1]. The results of this study provide insights on whether the modified approach helps to improve the education system. Keywords: Generative Learning, Undefined Task, Regular Assessment, POs.
Implementation of Design Thinking in Engineering Project using EPICS Human Centred Design Process
Santosh Naik, Azeem Unnisa, Yakub James, Hema Mahajan
Hyderabad Institute of Technology and Management
In this paper design thinking implementation in EPICS promotes doing engineering is being described. The paper begins by briefly reviewing history and roles of the EPICS in the engineering and it presents methods used to introduce EPICS to students and involvement of students in design thinking, prototype execution. The goal of this paper is to identify the need of village people in terms of reducing the strain of community partner through developing a hybrid sewing machine (tailoring machine). This paper further explains its working and the results which we got by using it.

Improving Classroom Delivery of Engineering Drawing Course using Problem Based Learning
Aniket T Suryawanshi, Sandeep A Thorat
Rajarambapu Institute of Technology
The objective of this work is to build skills among students, which are required to develop a product from given engineering drawing. Product development with the perspective of Problem Based Learning (PBL). We used innovative teaching technique in the form of Problem based learning (PBL) for engineering drawing subject in the first year engineering course. Result of semester shown that, this technique improves motivation and learning capability in the students. The results further indicate that students must be provided with a highly structure to achieve the highest learning outcome.

Online Proctoring for On-demand Exams in Distance Engineering Education Courses
Anil Kulkarni
Penn State University
This is a study in progress for assessing violation of academic integrity during offering online, on-demand exams in distance education courses. In the Summer of 2018, we incorporated a third-party proctoring service in two of our courses in which students from different countries were enrolled. The students were being watched and recorded while they took the exams online. To our disappointment, the number of violations we noticed exceeded our expectation. This paper presents the methodology used and our thoughts in improving the process.

Solving Ejection Method in Helicopters through EPICS
Varun Sesh Kuchibhotla, Nizambad Saikrishna, Mallavaram Revanth Reddy
Hyderabad Institute of Technology and Management
Ejection mechanism for helicopters is a mechanism designed to eject a pilot safely from a helicopter in case of an emergency. A capsule is designed to give protection to pilot after ejection. To give sufficient thrust to the capsule to eject safely, it is equipped with a canopy. When the pilot opts for ejection, the capsule will be seized and will be ejected downwards and flours a parachute. This parachute stabilizes the capsule and lands the pilot safely.
A Channelizing Approach to Teach Data Structures
Heera G Wali
KLE Technological University
Programming is a difficult course to learn. Data structures being the essential topic, difficulty in realizing high level concepts which are inherently abstract. Hence making them difficult to understand for novice programmers. The paper proposes a channelizing approach for by structuring the course with bridging course and case study based delivery for effectively teaching the underlying concepts of the fundamental data structure and also meets the course learning outcomes.

Changes in Engineering Education Towards 2020
Maragatharajan M
Kalasalingam Academy of Research & Education
Engineering system mainly focuses for better results in the way of scores as well as placement in companies but actual engineer is the one who invents new things or gives solution to the problems. The students must not depend only on the book way of education. Book is too gain knowledge to develop skills and talent classroom education is not enough. Practical education system plays a vital role in it. The students must aware of all the different learning possibilities and the correct platform to express their skills. The Education transformation helps to develop the knowledge, talent, skills, managerial behavior, and leadership skills, organizing quality and serving to public.

Enhancing the Quality of Computer Science Education with Industry Standard Coding Tools and Techniques
Sathyendra Bhat, Bikramjit Athokpam, Ragesh Raju, Rio D'Souza, Shreeranga Bhat
St Joseph Engineering College
Coding standards are one of the most important factors of good software systems. Nowadays, industries follow coding standards and use tools so that the end products can be of good quality, easy to maintain/modify/understand and are reusable. The current engineering education system, especially in the field of Computer Science does not strictly follow the coding standards; instead it prompts the learners to write the code/program using some editor and execute it without following any coding guidelines and programming styles. Due to this reason, there is a lot of gap between the codes that are written in industry and academics, especially when it comes to coding standards and usage of code refactoring tools. In this paper, we are trying to emphasize the importance of following good coding standards/guidelines so that the education system gets benefited and will result in excellent coders emerging out of engineering institutions.

Interfacing Automata Theory and Grammar with Compiler Design and its Applications through Innovative Collaboration of Teaching and Learning
M.Kameswari, R.Suganya
Thiagarajar College of Engineering, Madurai
Teaching the course on automata and formal languages is challenging because of its theoretical nature. Vagueness continues in learning, even though mathematics teacher illustrates some applications of automata theory without interfacing with their discipline subjects. As an experiment, Automata theory is taught by the mathematics teacher, compiler and design is taught by the core discipline teacher of CSE and the Collaborative teaching and learning (CLT) is practiced. After this practice, it is observed from students feedback on CTL that, CTL not only stimulate student’s interest but increases student’s higher order thinking.

Madadgaar – Network of Networks
Shubham Yadav, Abhishek Sinnakula, P Sparsha, Hema Mahajan
Hyderabad Institute of Technology and Management
In the present scenario, it is almost every person’s intent to contribute to the society by helping in their full potential. However, the objective to help is resolute only when accompanied with the cognizance about the needy and appropriate benefaction. Having this as the primary concern, we propose an online portal, namely Madadgaar, exclusively for the networking of NGOs and philanthropists. This portal includes the actual amenities or needs which have to be pertinently attended to by the NGOs.
Track 3 – Engineering Education Research in Computer and Allied Fields

Mobile Application Development using Project Based Learning Approach
Savita Patil
Rajarambapu Institute of Technology
Engineering education in IT field need to be updated with latest technologies in the industry and its inclusion in the curriculum. Android app developer profession is being in a great demand, so Mobile Application Development was introduced in the curriculum of Information Technology. Initially it was a theory courses and changed to practical course due to the observations found to achieve the outcome of developing the android application by the students. This paper presents the project based learning approach applied to this course and the subsequent improvement in achievement in the outcomes of the course.

MOOC Courses: Influence on Millennials
Praveshika Sinval, Aashima Malhotra, Vaishali Gupta
Chitkara University
The ultimate goal of universities should not be restricted to classrooms. Students come in class, teacher will deliver the course and we are thinking that it is sufficient for them. No, if we want their overall progress then we have to introduce some MOOCs in the curriculum as well. MOOC stands for (Massive Open Online Courses). The introduction of MOOC can increase their efficiency in terms that students can develop the habit of self-learning. They will not only restrict to limited study material but they can explore more knowledge. There is need to identify are MOOC courses really beneficial to the students or not?

Own Device-based Mobile Learning in Personal Cloud Environment: A Framework to Address Digital Divide
Susanta Mitra, Somsubhra Gupta
Amity University, Kolkata
Mobile learning under cloud environment, an amalgamation between mobile cloud computing and mobile learning has gained wide academic and commercial recognition during last few years. Although researches on MOOC and other means of Digital Learning is widely circulated, but research to enhance traditional mobile learning using newer types of ubiquitous and pervasive devices (e.g. Modular Object Oriented Dynamic Learning Environment or MOODLE) for collecting resources is yet to be widely circulated in the literature. The proposed work is expected to make learning more cost-effective, collaborative and practical for the learners using Personal Cloud environment. This solution can be beneficial for mass learners including poor and under privileged and will help in getting rid of digital divide.

SCRUM Adaptation in Academics: Converging Knowledge Management with Collaboration
Jyoti Snehi, Ritu Rathee
Chitkara University
Agile methodologies are being greatly used in development of projects in various organizations which earlier used traditional methods of product development. Engineering education also require to adopt agile methodologies to embrace the quick changes in curriculum according to the trends in technologies. In our paper we have proposed Scrum adaptation in academic and its convergence of collaboration and knowledge management to build a strong teaching/learning model for Engineering education. It would help in promoting teamwork, motivation and engagement of Teachers/Learners.

Toward Outcome Based Education (OBE): An Impact of Active Learning Approach for ‘Computer Organization’ Course
Snehal Patil, Sushma Kulkarni, Sachin K. Patil
Rajarambapu Institute of Technology
In recent year, there is an incredible development in technology which brought innovative changes in educational sector. Active learning approach are vital in teaching learning process such as content delivery, assessment, monitoring etc. This paper discussed about active learning activities as Simulation Tool, Buzz Activity through Animated video, and Poster Presentation with their performance and impact evaluated by considering Result Analysis and Course Outcome attainment of two consecutive years for “computer organization” course.
Track 4 – Engineering Education Research in other Engineering Disciplines

A Top Down Approach from Job to Course  
Vishal B Pattanashetty, Shamshuddin K, Nalini Iyer  
KLE Technological University  
The skilled employee scarcity is upsetting businesses all over the globe. Employers report that they are unable to find the skills they required, the financial growth has produced enormous job opportunities but lack of skills is the key cause for the unemployment. This paper elucidates practices in achieving the skill in the learners by offering two kinds of learning activities job oriented certification and personalized exercises with hands-on experiments.

An Experience of Implementing Agile Project Management Practice in Freshman Engineering Course  
Jyoti Gadad, Vinay Talageri, Kaushik Mallibhat, Sanjeev Kavale, Gopalkrishna Joshi  
KLE Technological University  
Projects are important part of engineering curriculum. They figure in different forms and scope, from course projects to capstone designs in the curriculum. Ensuring that, this opportunity in terms of projects, results in a good learning experience for all the students is a challenge because of multiple reasons. And these challenges, if not addressed in time, results in incomplete projects and poor learning for students. This paper discusses about the challenges faced by freshman students during implementation of the projects and describes about how agile practice can be brought into engineering student projects. The study focuses on investigating how agile practice helps to improve success rate of engineering student projects. The context of the study was in a freshman engineering Project Based Learning (PBL) course titled Engineering Exploration. The analysis of five semesters' data reflects that the success rate of the projects is improved with the use of agile practice.

An Initial Classification of Engineering Education Research Papers in India  
Arizona State University, *KLE Technological University  
This paper provides an initial attempt at classifying papers published in engineering education in India. Research in engineering education, especially in the form of Scholarship of Teaching and Learning (SoTL) is experiencing a significant growth in India, and it is important to identify the strengths and weaknesses of these publications to provide appropriate training and mentoring to faculty interested in pursuing this area of research. An interesting additional outcome from this work is the conclusion that existing frameworks for classifying this type of literature might be inadequate, and the development of a more appropriate framework will be an important venture with possible global implications.

An Integrated Pedagogical Approach for Effective Teaching of Research Methodology Course at Undergraduate Level  
Shivalingsarj Vijaykumar Desai  
KLE Technological University  
Research Methodology is a systematic, theoretical analysis of the methods applied to a field of study. The objective of the course is to give an insight into the elements of research methods. In-order to address the challenge, of heterogeneity of the course contents, the present study with an integrated approach of various in-class activities were practiced. The exercise resulted in addressing different graduate attributes with learning.

Case Study Approach for Developing Teaching in Management by Applying Think-Pair-Share Technique  
Seema S Desai  
Rajarambapu Institute of Technology  
This research tested that case study is more effective than lecture method to promote learning of key Management concepts like, developing oral and written communication skills, and understanding the importance of Decision making concepts in corporate life. After the implementation of the Think-Pair-Share model in the experiment, it was found that the student’s capability and interest to solve cases enhanced. This was observed by the progress of the mean marks for each test, the improvement of the marks was like 76 marks in phase I which raised 87 marks in phase II. Also, the student number who exceeded the Minimum Levels of Learning Standard improved to 51 students in phase III from 35 students in phase II. The results presented here suggest that case studies using TPS (Think-Pair-Share) are significantly more effective than other methods of content delivery in increasing performance and can provide a rich basis for developing students’ problem solving and decision making skills. Based on these findings, T-P-S should be considered as a preferred method for teaching Cases in the Management courses. Keywords: Think-Pair-Share, Reading, Active Research in the classroom.
Track 4 – Engineering Education Research in other Engineering Disciplines

Challenges in Implementing IEEE EPICS by Faculty

Yakub James, Santosh Naik, Arzitha Rachakonda, Azeem Unnisa
Hyderabad Institute of Technology and Management

This paper is based on the IEEE Epics initiation and Challenges that we faced during Problem Identification and Specification Development Phase. In HITAM Engineering college we are seven functional faculty initiated to make the students to do projects in IEEE EPICS. The paper begins by briefly reviewing history and role of the IEEE EPICS in the engineering curriculum. It presents methods used to introduce IEEE EPICS to students and involvement of students in identifying NGO as community partner, problem Identification and specification development stages from EPICS Design Process.

Design, Development of Android Application for Teaching, Learning with Mobile Computing Devices

Anjali Santosh Chachra
KJ Somaiya College of Engineering

Mobile Technology enables educators to wind up more portable, synergistic and inventive. This paper depicts development of versatile classroom application called MyClassroom for higher education institutions. The mobile app includes development of an android app for teacher and students to keep students engaged and focused in the classroom. It is designed to give content creators and educators the ability to go paperless and centralize their eLearning materials in one cloud-based location.

Educatng Engineers to Meet Grand Challenges (GC’s) and Address Sustainable Development Goals (SDG’s)

John Tharakan
Howard University

In this paper, we posit that there are several critically necessary components within any engineering program that would prepare graduates to meet the GC’s and address SDG’s. These include first and foremost, a focus on critical and creative thinking. Second, and as important, an incorporation of real world project based learning that is open-ended, team-based and design focused. Third, it is essential that ethics in science and engineering be an integral part of the curriculum. Finally, an ability to bring all these together and be able to communicate through a team-written final project report and an oral group presentation of the research and findings on the open-ended problem/project, is essential. Program chairs and curriculum coordinators should assist faculty to incorporate into their courses such pedagogical approaches to enhance the preparedness of our engineering graduates.

Expected Benefits of Augmented and Virtual Reality Based Online Learning Platforms for Engineering Education

Abhishek Garg, Sartajvir Singh, Lipika Gupta
Chitkara University

In past literature, very rare studies were found that involves the augmented and virtual reality in online learning platforms such as MOOC courses. By introducing the MOOC based on augmented reality (AR) and virtual reality (VR), engineering education can deliver information to the engineering student in very interactive and interesting way. With AR and VR in MOOC courses, students will easily understand 3D structure, designing of boards, and many more. This happened because in AR and VR figures are seemed like a 3D view or it seems like you are stand in front of this object virtually, so student easily understand or visualize the concept (or logic). This concept will be beneficial to gather the interest of student and carry out an engineering experiment represented by real or virtual components.

Fishbowl Discussion - An Innovative Tool for Learning Marketing

Aniket Suresh Pardeshi
Rajarambapu Institute of Technology

As the management studies are concerned subject taught in the classes and teaching through case method has been followed by many teachers. But, as far as marketing is concerned it is more than just learning in between four walls. Major decisions in an organization can be taken through the involvement of employees so as this technique involve every student in the class for the discussion on the topic given.

G-Suit Based Application for Calculations of Course and Program Outcome Attainment

Kartik R. Patel, Arati S Phadke, Sangeeta Kulkarni
KJ Somaiya College of Engineering

Outcome based education focuses on attainment of program outcomes (PO) and course outcomes (CO). For every faculty member calculations of CO attainment and analysis of indirect assessment is a tedious task because of variety of assessment tools and large number of students. An in-house tool is developed using G-Suit application which ensures user friendly interface, easy access, uniformity, minimal errors and time saving as compared to manual method.
Track 4 – Engineering Education Research in other Engineering Disciplines

Identification and Classification of Teaching Learning Tools Aligned with Education 4.0
Deepak H Sharma, Anjali Santosh Chachra
KJ Somaiya College of Engineering

The teachers struggle for finding right kind of technology and tools useful for teaching learning activities. With the emergence of Education 4.0, the use of technology and tools by the teachers is bound to increase. The objective of this paper is to understand various needs of teachers, help find appropriate technology and tools and classify these tools for teaching learning activities in alignment with various Education 4.0 characteristics. The classification of tools has been presented in a tabular form for teaching community in general.

Impact of Industry Academia Collaboration
Prasenjit Das, Shaily Jain
Chitkara University

Now a days, Academic institutions and Universities are collaborating with industries for seeking help in designing curriculum as per the industry requirements, training of faculty and students to make them industry ready, arranging industrial visits for students so that they can taste the culture of industry and finally help them in placements. In this paper, we are discussing various industry collaborations done in computer science & Engineering, their nature of collaborations and finally the output of these collaborations.

Instilling Research Attitude in Students at Mechanical Engineering School Through REU Approach
Prashant P Revankar, Nagaraj Banapurmath, Rajashekhar Hosmath, Mahesh Gorawar, Rakesh Tapaskar
KLE Technological University

The reported work gives a vivid picture of the experience gained in successfully implementation of this research oriented course that has also propelled the Institution-level research objectives. The major advantage of this initiative has been the promotion of inter-disciplinary research that has been defined as the crux of any research activity. The discussions made in this publication highlight the work done in the School of Mechanical Engineering as part of this institutional initiative. The overall results indicated a satisfaction to the students in terms of better grades and developing interest to further their research instincts in the later part of their career.

Marketing Mix Contest As a Tool of Experiential Learning
Seema S Desai
Rajarambapu Institute of Technology

This paper presents an assessment of a semester long marketing mix contest, which was incorporated into the Marketing Management Course as a tool of Experiential Learning. The contest required all student teams to deal with the assigned client and compete with each other to produce the winning marketing mix. Students feedback indicated that they enjoyed the experiential learning opportunity and the contest design. Keywords: Experiential Learning; Live Cases; Class Contest; Classroom Projects; Marketing Mix.

Micro-Learning As a Means to Lifelong Learning for Millenials
Sanjeev M Kavale, Raghuraja Adi, Kaushik Mallibhat, Ashwin Kubasadgoudar
KLE Technological University

The Millenials learning preferences are unique which need special efforts from teachers to address these preferences. Micro-learning is all about learning in small doses, as tiny bursts of training material that one can comprehend in a short amount of time. Because of these characteristics, micro-learning is one of the most suitable pedagogical tool for Millenials. One such effort was made in the course Engineering Exploration, to understand the effect of micro-learning on teaching basics of design and development of a simple mechatronic system. The study of this effort with regards to freshman students becoming lifelong learners is also presented in this article.

New Methodology for the Enhancement of the Strength of Students in Government Primary Schools
Arun Upmanyu, Himanshu Sharma, Archana Mantri, Jyotsna Kaushal, Pooja Mahajan
Chitkara University

In this paper, the new methodology for the enhancement of the strength of students in the government primary school has been proposed. The methodology consists of the different approaches to improve the strength of students. The major emphasis on the infrastructural improvement and awareness to drift their mindset with the help of National Service Scheme (NSS) wings of the senior government schools. In the last part of the paper, undergraduate engineering projects in community service (EPICS) course in private universities/colleges has been used as a tool for the fulfillment of their needs.
Track 4 – Engineering Education Research in other Engineering Disciplines

STEM Education As a Career for Engineering Graduates
Aditya R Bhatnagar
Drona Edutronics Pvt Ltd
There is a huge opportunity of the tune of 300K jobs in the area of STEM education. Engineering graduates are well suited for this role provided they have the interest and passion to teach children and do in depth research. The study shows that engineers can indeed be valuable in this field, and that a mentoring program for such interested students can be developed by Universities to develop and test attitudes and interests. Keywords – STEM, Education, Mentors

Team Alchemy: Tools for Overcoming Common Problems in Managing Team Projects in Engineering Education
Elizabeth A Powell, Mohan D Rao
Tennessee Tech University
This presentation offers tools that have proven effective in assisting engineering faculty and students in the development and utilization of professional skills including interpersonal, communication, and teamwork skills. These “soft skills” have become increasingly important in addition to technical skills in the training of today’s professional engineer as indicated in multiple surveys by the Association of Colleges and Employers.

Technology Enhanced Learning: Introducing Mobile Phone Eco System in Classroom Activity
Madhu V Asundi, Vinay Talageri, Gopal Joshi
KLE Technological University
Technology enhanced learning (TEL) enables maximum retention of the concepts and highest interaction between students and teachers. Now a days even though mobile phones are extensively used in society, its application in education is observed to be limited. Can we design learning experience for students through use of mobile phones enhancing students’ learning? This paper discusses the design of such a learning experience incorporating use of mobile phones and its impact. The experience was created in a module – “Data Acquisition and Analysis” of a freshman course by name “Engineering Exploration”.

Test Item Analysis for Effective Question Paper Design
Kartik R. Patel
KJ Somaiya College of Engineering
The role of teacher is to design effective question paper which will test skills acquired by the students during their education. Every question needs to be checked for the difficulty level and discriminating between learner with high and low scores. Parameters like facilitation value and discrimination index are calculated for each course of semester VII end semester exam questions. Such Test item analysis will direct teachers to design effective questions.

Use of Kahoot As A Formative Assessment Tool in Engineering Education
Shweta Dhawan Chachra
KJ Somaiya College of Engineering
In this paper we have proposed Kahoot as a formative assessment tool in undergraduate engineering education. A study was carried out on Third year Computer Engineering students. The study employed a Quiz followed by a Feedback Survey created through the Kahoot platform. The Quiz was based on Software Engineering Course. A total of 28 students participated in the study. The Survey showed that Kahoot enhanced Classroom engagement and promoted active learning. The students found that Kahoot was an effective, engaging tool which made learning and competing with each other fun.

Video Case Study- Immersive approach for Learning
Madhav U Tilve
Rajarambapu Institute of Technology
Case Study method is a highly important tool in the hands of a faculty as it develops strong analytical and logical thinking skills of a student. It also facilitates learning through deeper analysis of impact of decision taken. Video case study is a step forward to make this method more immersive and engaging for the students. Forbes found that 59% of senior executives prefer video over text, and 75% of executives watch videos while working which will apply to students too. This pilot study revealed that use of Video Case study was effective in providing clarity and better engagement.
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