OUTCOME BASED EDUCATION

NATIONAL CONFERENCE

OBE2023

TIET, PATIALA

NATIONAL CONFERENCE ON

OUTCOME BASED EDUCATION

-PERSPECTIVES & PRACTICES

17-18 APRIL, 2023

ABSTRACT BOOK

Thapar Institute of Engineering & Technology

Patiala, Punjab 147004 India

Published by:

Thapar Institute of Engineering & Technology

P.O. Box 32, Bhadson Road, Patiala, Punjab, 147004, India

Editors :

Dr. Parag Nijhawan
Dr. Gagandeep Kaur
Dr. Gurvinder Kaur
Dr. Anoop Kumar

Abstract book designed and formatted by Glostem

NATIONAL CONFERENCE ON

OUTCOME BASED EDUCATION

-PERSPECTIVES & PRACTICES

17-18 APRIL, 2023

ABSTRACT BOOK

Thapar Institute of Engineering & Technology

Patiala, Punjab 147004 India

“Education is the most powerful weapon which you can use to change the world.”

- Nelson Mandela

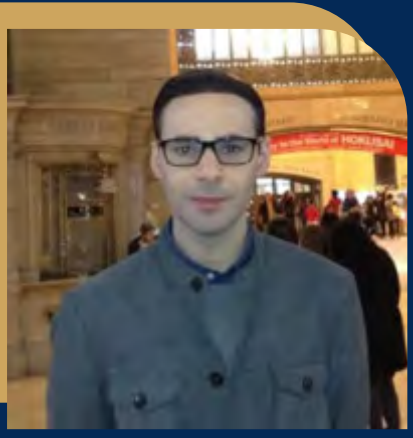
SPEAKERS

Rajit Sikka

Head Academic Relations,
India-North TCS

Kaustuv Roy

Professor, TSLAS, TIET



Nizar Chatti

Associate Professor, Automatic control & computer engineering
University of Angers, France

ORGANIZING COMMITTEE

S. No.	Name	Designation	Affiliation
1.	Prof Padmakumar Nair	Patron, Director	TIET, Patiala
2.	Mr Sharad Sanjay Sen	Chairperson, Member Board of Governors	TIET, Patiala
3.	Prof Ajay Batish	Dy Chairperson, Deputy Director	TIET, Patiala
4.	Dr Parag Nijhawan	Convener, Associate Professor, EIED	TIET, Patiala
5.	Dr Gagandeep Kaur	Convener, Associate Professor, EIED	TIET, Patiala
6.	Dr Anoop Kumar	Organising Secretary, Associate Professor, SEE	TIET, Patiala
7.	Dr Gurvinder Kaur	Organizing Secretary, Associate Professor, SHSS	TIET, Patiala
8.	Dr TP Singh	Organizing Committee Member, Head, Mechanical	TIET, Patiala
9.	Dr Rajesh Khanna	Organizing Committee Member	TIET, Patiala
10.	Dr Manmohan Chhibber	Organizing Committee Member	TIET, Patiala
11.	Dr Meenakshi Rana	Organizing Committee Member	TIET, Patiala
12.	Dr Karminder Singh	Organizing Committee Member	TIET, Patiala
13.	Dr S C Bose	Organizing Committee Member	TIET, Patiala
14.	Dr Loveleen Kaur	Organizing Committee Member	TIET, Patiala
15.	Dr Amanpreet Kaur	Organizing Committee Member	TIET, Patiala

CONTENTS

Paradigms on Teaching and Learning

IMPORTANCE OF SUPPORTING CLIMATE FOR FACULTY MOTIVATION IN OBE

Levia and Rishita Goyal
School of Humanities and Social Sciences, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: llevia_phd20@thapar.edu

The criticality of faculty in achieving the goals of higher education i.e. outcome based education (OBE) remains unquestioned. This study aims to study faculty as target to workplace bullying (WB) and its response to the same. On surveying 520 junior faculty from various HEIs of Punjab, 228 were found under the threat of WB. Further when these 228 targets were contacted to understand their response to the situation, 211 responses were received. WB depicted significant relation with the neglect as the coping response. Neglect as response involved: loss of motivation to do job, calling sick, showing up late, putting less efforts and taking a lot of breaks. During the analysis of field notes, it was further found that junior faculty found themselves with no solution but to tolerate WB in order to progress in career. They also mentioned that the institutions did not involve any effective conflict management solutions, hence they chose neglect as an option. It can thus, be understood that in order to progress in achieving desired goal of OBE, first it is important to get the mentors feel safe and focused at their work, for them to deliver the best. Hence, focus on building stronger and institutions is recommended.

METADISCOURSE IN ENGINEERING AND MANAGEMENT STUDENTS' SPONTANEOUS TEXTS

Swadha Bhartia and Anil Sehrawat
Amity Institute of English Studies & Research, Amity University, Noida, UP, India
Email id: sbhartia@amity.edu

Writing is the graphical representation of communication where the writers share information and project their feelings and considerations to the reader. More than 90% of mid-level professionals rate effective writing skills as an important skill (National Commission on Writing, 2003). Furthermore, the use of written language is increasing day by day in the everyday social context (e.g., Emails, text messages, WhatsApp, and other social media). When writers show awareness about the audience's needs and endeavour to express their ideas to reflect the reader's needs maturity in writing gets reflected. Meta discourse assist readers in connecting, organising, interpreting, evaluating, and developing attitudes regarding the informative material. This paper explores the use of various metadiscourse features used by undergraduate and postgraduate students of Engineering and Management student to express their viewpoint and engage with readers. The findings of the study indicates that the ESL writers focus more on expressing their ideas and ignore their responsibility to anticipate the readers' reaction, to inform them and engage them in the text. Ability to produce an outcome based text is import to be successful at a diversified workplace. How this skill can be developed in ESL/writing/communication skills classroom is suggested based on the finding of the study.

PROFESSIONAL COMMUNICATION SKILLS IN ENGLISH FOR INDIAN ENGINEERING STUDENTS IN INDUSTRY 4.0 ERA: A PROPOSED TEACHING FRAMEWORK

Deler Singh
Jaypee University of Information Technology, Waknaghat, Solan, Himachal Pradesh, India
Email Id: diler227@gmail.com

Industry 4.0 emphasises the need for professionals who possess impeccable interpersonal skills and an understanding of the interdependence between advanced technologies and human resources. In addition to domain skills, candidates must have soft skills such as communication, critical thinking and empathy to design customer-centric solutions and services. This paper aims to present a framework for designing such a course on professional communication for engineering students. A proposed framework for the same has been discussed and illustrated. Guidelines for improving interpersonal skills have been made, keeping in mind the notion that communication should be an integral part of the curriculum rather than an emphasis on incorporating a course on communication skills in engineering education.

EDUCATIONAL DATA MINING APPLICATION: A REVIEW FROM E-LEARNING PERSPECTIVE

Kudratdeep Aulakh
Computer Science and Engineering, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: deep.kudrat19@gmail.com

In present times, Educational Data Mining (EDM) holds immense potential for proposing improvements to the education system in accordance with the needs of students. EDM helps researchers in obtaining valuable information from large educational datasets, using different techniques and tools. The unique patterns emerging from the information extracted from datasets can contribute to improvements in student performance and, thus, to the enhancement of the teaching-learning process. Research involving the application of EDM to e-learning has gained ground in recent years, owing to the increasing growth of e-learning systems or technology-assisted learning systems. This paper comprises an overview of EDM and E-learning, along with a survey of some selected research papers dealing with the concept of EDM, particularly with reference to the e-learning environment. In specific, the paper focuses on review of EDM and e-learning research work in three spheres: EDM application to e-learning, student performance prediction in technology-assisted learning systems, and impact of Covid-19 pandemic on the e-learning environment. The key objective behind the review is to highlight the use of EDM techniques for improving the performance and learning behavior of students in e-learning settings. The review carried out in this paper is significant, especially against the backdrop of the fact those e-learning programs have become an inevitable instructional mechanism during the pandemic crisis.

OUTPUT VERSUS OUTCOME IN EDUCATION: A CHANGE IN PERSPECTIVE IN LIGHT OF OBE

John Milton M. C
Department of Advanced Zoology and Biotechnology, Loyola College, Chennai, Tamil Nadu, India
Email id: drmilton@loyolacollege.edu

In any operation, the input comes first and the output comes last. Both share a set of indicators and are interconnected. The intricacy of the input variables affects how well a finished product performs as an output. The term "input" in the context of education refers to personnel, surroundings, instructional aids, accessibility to educational materials, and associated costs. National policies and regulatory bodies, including NCERT, UGC, AICTE, etc., ensure that these inputs meet minimal standards. On the other hand, output primarily refers to the total number of students who ultimately complete the educational programme through a predetermined procedure of evaluation. Regulatory bodies also offer guidelines in this area to uphold basic standards. A direct comparison of these input and output values served as the standard for evaluating the accomplishment of the educational objectives that institutions had established for themselves over many years. These matrices, however, have neglected to account for something known as "outcome," which comes as a result or consequence of this interpretation. In other words, outcome emphasises content while output emphasises numbers. Seeing the obvious difference between output and outcome is crucial when pursuing educational goals. It is an undeniable fact that the ratio of output to outcome has always been a mismatch. The inflated pass rates (output) of institutions in university examinations have failed to prove matching numbers of graduates with employable skills (outcome). Communication, leadership, problem-solving, teamwork, dependability, self-management, planning and organisation, technology, initiative, and constant learning are considered to be the main employability talents. In order to make graduates employable, the UGC identifies these as graduate qualities and demands that colleges and universities develop their curricula, instructional strategies, and evaluation procedures to take these critical abilities into account. The output and outcome could be improved by carefully including these talents as quantifiable attributes in the teaching and learning process, and OBE offers tremendous scope in this direction. In this context, outcomes-based education is a welcome move. Following the OBE principles, UGC has developed a Learning Outcomes-Based Curriculum Framework (LOCF) for around 38 subject disciplines. Many institutions in the country have released models of their own, customising this idea of LOCF from UGC. In this line, Loyola College, a 97-year-old institution in Tamil Nadu, India, has been experimenting with its highly customised LOCF model since 2021 for the undergraduate and postgraduate programmes that it offers. The problems encountered along the way, the responses of stakeholders, and the best academic practises that were envisaged and attained through this Loyola LOCF model are highlighted in this paper as a case study.

AWARENESS ON THE ADVANTAGES AND DISADVANTAGES OF EDUCATION 4.0 BASED OUTCOME BASED EDUCATION AMONG ENGINEERING STUDENTS

Jasleen Kaur and Anupam Sharma
School of Humanities & Social Sciences, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: jaasleen@yahoo.com

Education 4.0 is a response to the needs of Industry 4.0, in which humans and technology collaborate to create new opportunities. The new learning vision encourages students to learn skills and knowledge flexibly with time, place, and method. Outcome based Education (OBE) is a student-centric teaching and learning approach based on Education 4.0 features and benefits. It is a curriculum delivery and assessment approach scheduled to achieve stated outcomes. The primary objective is to access 180 engineering students' understanding of the advantages and disadvantages of Education 4.0 based OBE via a self-reported questionnaire. The data were analyzed using descriptive statistics (mean and standard deviation). The findings revealed that the respondents know the advantages and disadvantages of the Education 4.0 based OBE. The results showed that Education 4.0-based OBE assists students in deepening their knowledge and use of technology. However, there is strong resistance to adopting the new student-centric approach, which burdens students. This study provides insights into the strengths and weaknesses of the education 4.0 based OBE system to the Ministry of Higher Education India and academics, allowing them to develop strategies for maximizing the advantages and overcoming the disadvantages of education 4.0.

GROUP MINI PROJECT, FLIP CLASSROOM AND INTENSIVE FEEDBACK: EFFECTIVE STRATEGIES FOR STUDENT LEARNING IN OUTCOME BASED EDUCATION

Sayan Sadhu
Mechanical Engineering Department, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: sayan.sadhu@thapar.edu

Outcome Based Education (OBE) has been gaining popularity in recent years as a means to enhance student learning and engagement. This paper aims to investigate the impact of three OBE strategies on student performance and satisfaction: group mini projects, flip classroom, and intensive feedback system. Under the guidance of Trinity College Dublin, Ireland, the Center for Academic Practices and Student Learning (CAPSL), established in the Thapar Institute, offers NDPs (New Directions Programmes) and ADPs (Advanced Directions Programmes) for its faculty in the form of practical workshops covering curriculum, evaluation, outcome-based education, reflective feedback, and other facets of teaching and learning. As an assignment of new direction programme a student intervention is done for a B.E. Mechanical final year course Renewable Energy System of student strength around 80 with different OBE strategies namely group mini project, flip classroom, and intensive feedback. Group mini projects encourage collaborative learning and problem-solving skills, while also providing an opportunity for students to apply theoretical concepts to real-world scenarios. Group mini projects reported a higher level of engagement and better performance compared to those who completed individual assignments. The flip classroom model involves assigning lectures as homework and using class time for interactive activities and discussions. Flipped classroom reported higher levels of engagement and satisfaction compared to those in traditional lecture-based courses. The intensive feedback system involves providing frequent, detailed feedback to students on their progress towards achieving learning outcomes. The study found that this approach improved student motivation, and ultimately led to better academic performance. In conclusion, our study demonstrates the effectiveness of OBE strategies in enhancing student learning and engagement. These findings have significant implications for educators seeking to improve student outcomes and create more effective teaching and learning environments.

THINK-PAIR-SHARE – AN EFFECTIVE APPROACH FOR COOPERATIVE LEARNING

Ranjana Prakash[1] and N. Tejo Prakash[2]
[1]School of Chemistry and Biochemistry, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
[2]School of Energy and Environment, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: ntejoprakash@thapar.edu

One of the effective tools to inculcate a nature of cooperative learning, sharing and a process that facilitates collective problem-solving capability is broadly considered at "Think-Pair-Share" approach. An experimental study involving a group of 22 students divided in sub-groups of two was chosen to understand the effectiveness of this approach. Each subgroup was expected to gather basics for selected topics from the course of Applied Chemistry; by collecting details from various sources; and prepare a presentation. Each sub-group was then asked to present the topic to rest of sub-groups collectively. All the students were asked to discuss, debate, and also opine their views during these deliberations. One of the important challenges was to build relationships and compatibility within sub-groups, to make them join hands with the partner without looking at who is the partner. The second challenge was to inculcate an iota of challenge in choosing and presenting the topic within the restriction of space and time. This endeavour brought a realization that such non-traditional interactions increased the individual student's interest in the subject through focusing on challenges associated with comprehending the appropriate knowledge from various sources; sharing of information and ideas with classmates; and most importantly build relationships and communication skills to do so.

ROLE OF THE RUBRIC IN THE OUTCOME BASED EDUCATION

Mandeep Singh
Electrical and Instrumentation Engineering Department, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: mdsingh@thapar.edu

Outcome based education has open up new paradigm specially in the technical education. To assess the attainment of the outcome based education, various tools are available like key performance indicators (KPI), job placement percentage and direct measurement of marks in the examination etc. Rubrics help to ensure that assessments are aligned with learning outcomes, as well as the uniformity among different evaluators. By specifying the knowledge, skills, and abilities that students are expected to demonstrate, rubrics ensure that assessments are focused on the most important aspects of learning. In the present study, significance of the pre-announced rubric with students has been presented. Two test groups were taken for the same subject of engineering education in India. One set of students were not aware of how the assessment will be done, however the other group has been informed with a rubric that includes the parameters for which the students will be evaluated. After the analysis, it has been observed that when the assessment rubric was shared with the students before the evaluation, the attainment of outcome is better. This shows that outcome based education assessment tools and methodology should be shared with all the stakeholders to ensure that assessment is aligned with learning outcomes, that grading is transparent and objective, and that students receive meaningful feedback to improve their learning.

BRAINACULUM' – A NOVEL MODEL, BASED ON THE FUNCTIONING OF THE HUMAN BRAIN, FOR DESIGNING CURRICULUM AND PEDAGOGY

Neloy Kumar Chakroborty
Thapar School of Liberal Arts and Sciences, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: neloy.chakroborty@thapar.edu

The current education models often have the limitations to offer the required practical training to the students, exerting tremendous pressure on the grades, and creating a milieu of intense competition without focusing their efforts on the holistic growth of the students. Inevitably, a healthy body of research has reported that increased academic stress (extreme academic course load, high study time, fast time management, increased competition in the classroom, economic factors, pressure from families, and adaptations to new environments, etc.) is linked with compromised motivation and creativity, low academic success, increased rates of college dropouts, and severe psychological conditions, such as depression and suicidal tendency. In this work, I am proposing a model, called 'Brainaculum' that aims to design course curricula and pedagogy based on the salient features of human learning and memory. The model, Brainaculum, takes into account the following salient features of human learning in its design: learning is purposive, improving one cognitive skill can improve other cognitive skills (Cognitive Mutualism), building of 'Schema' (a cognitive construct that meaningfully fits the new knowledge into the memory of other knowledge) during knowledge acquisition, spacing the repetitions of academic information in time rather than massing them forms better memory, and brain-training can strengthen working memory capacity, etc. Brainaculum has the goals to reduce overall academic pressure, reinforce positive mental health in the students that ultimately contributes to their academic motivation, learning and memory, creative thinking, self steem, self-perceived happiness (more dopamine and serotonin in the brain), and management of stress as well as train the teachers with the tools of educational psychology and neuroscience so that teaching styles can match the preferred learning styles of the students (applications of 'Learning Style Inventory'), teachers can guide the students to find out appropriate study strategies for various courses (applying 'knowledge, belief, commitment, and planning or KBCP framework'), and teachers can foster student's creative thinking ability and capacity to learn as 'abstract' learners by performing learning assessments based on student performances in creative tasks that solve real world problems. This way, Brainaculum intends to contribute to the various paradigms of teaching and learning of the 'Outcome Based Education' system.

TEAMWORK AND COLLABORATION: EVIDENCE FOR LEARNING

Parminder Singh[1] and Parag Nijhawan[2]
[1]Chemical Engineering Department, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
[2]Electrical and Instrumentation Engineering Department, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: parminder.singh@thapar.edu

Collaboration and learning will foster social and academic relationships that will extend far beyond the classroom and individual course. It will create environments in which students can practise developing their leadership abilities. This will reduce both classroom and examination anxiety. This encourages students to help one another solve problems and share knowledge, which not only improves collaboration skills but also leads to deeper learning and understanding. This will also encourage students to collaborate in order to maximise their own and each other's learning. Students will benefit greatly from this approach because it fosters an environment of active, involved, exploratory learning, encourages diverse understanding, builds self-esteem in students, promotes positive race relations, and employs a team approach to problem solving while maintaining individual accountability. This intervention was applied in the tutorial classes where students were divided into small groups. Each group was assigned a specific task. The students came up with varied approaches to solve a particular problem which promoted a healthier environment of discussion with their unprecedented involvement. From the students feedback about this approach, it was seen that they got really excited and enthusiastic in the course. The students feedback really suggest that they were able to overcome their insecurities, and were actively engaged in the whole teaching learning process.

EFFECTIVE TEACHING AND EVALUATION STRATEGIES: THE KEY TO OUTCOME-BASED LEARNING

Shireesh Kumar Rai
ECED, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: skumar.rai@thapar.edu

The outcome-based learning is emphasized in the education system for many years. There are two main pillars of outcome-based learning. The first one is effective teaching and the second one is good strategies for evaluation. Effective teaching involves many parameters that may be changed from time to time as a single teaching strategy will not be successful in all scenarios and for all the learners. The role of a teacher is to modify their teaching and evaluation strategies to achieve the goal of outcome-based learning. The strategies may depend on the nature of the course, class strength, learners' ability, etc. In this paper, a few ideas related to effective teaching and evaluation methods are suggested in view of outcome-based learning. The various methods that can be implemented to improve the teaching-learning environment have been highlighted. A survey and feedback for these practices have also been given in support of the efficacy of these methods.

TEACHING COMMUNICATIVE SKILLS TO UNDERGRADUATE STUDENTS OF GOVERNMENT COLLEGES IN NORTH INDIA: PROBLEMS AND SOLUTIONS

Dipali S Bhandari[1], and Deler Singh[2]
[1]Government Degree College Bharali, Anj Bhoj, Sirmour, Himachal Pradesh, India
[2]Jaypee University of Information Technology, Waknaghat, Solan, Himachal Pradesh, India
Email id: dipalisbhandari@gmail.com

Speaking in English does not come naturally to the students coming from rural backgrounds in India. Because of a lack of opportunities involving interactions in English both inside and outside the classrooms, students seldom get practice in interpersonal communication in English. Mother tongue further adds to the problem by affecting the confidence of students. Covid-19 and overdependence on electronic gadgets have significantly reduced human interactions among youngsters. The present study addresses the abovementioned problems while providing guidelines to Government college students in North India for improving their interpersonal communication skills in English.

GROUP LEARNING – AN EFFECTIVE AND COLLABORATIVE WAY IN STUDENT LEARNING

M. Vasundhara
Department of Biotechnology, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: mvasundhara@thapar.edu

Group learning is a part of student centered learning. It is one of the teaching techniques, which provides students a very good opportunity to learn and analyze the subject effectively. Group learning encourages students to think for themselves, share their ideas among themselves. It ensures participation of every student and own the understanding. The objective of the study was to see the effectiveness of group learning and analyze the feedback of students after practicing on the students. The students were divided into groups and the study material was distributed and they were asked to understand, analyze and to make important points from the article for discussion. Students were asked to formulate questions and ask another group. Wherever required suitable intervention was done. The students were given feedback forms and were asked to grade certain parameters based on their collaborative learning. The objective was to see if think, pare, share helps in improving overall performance of the student and how effective was this learning process? The students were asked to grade as strongly agree, agree, partially agree and disagree. More than 80% students agreed with the collaborative learning process, a concept that was found acceptable to the student community about 24% students agreed to the various aspects of collaborative learning. Based on the data and analysis done, it may be concluded that learning in a group has lot of strengths and effectiveness and definitely can be an effective strategy in teaching.

FOSTERING CREATIVITY IN HIGHER EDUCATION: THE IMPACT OF INNOVATIVE TEACHING AND LEARNING STRATEGIES

Pankaj Kumar
Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: pankaj.kumar@thapar.edu

The study explores the impact of innovative teaching strategies on fostering creativity in higher education. The study employs multiple approaches, including the use of adjustable animations, small group projects, and group activities on think, pair, and share. Findings indicate that innovative teaching strategies, such as adjustable animations, project-based learning, and collaborative problem-solving, significantly impact students' creativity and motivation. Adjustable animations can help students visualize complex concepts, improve their understanding of abstract ideas, and stimulate their creativity by allowing them to explore different scenarios and variations. Additionally, the paper discusses the challenges and opportunities of implementing innovative teaching strategies for higher education, including the need for faculty development and requirement. The study suggests that fostering creativity through innovative teaching strategies can help prepare students for success in a rapidly changing and complex world. Overall, the paper argues that adjustable animations and small group projects can be valuable resources for fostering innovation and creativity in teaching and learning, especially in fields requiring visual thinking and experimentation.

DEVELOPMENT OF TECHNOLOGY-ENHANCED TEACHING AND LEARNING ACTIVITIES

Santosh Sonar
Electrical and Instrumentation Engineering Department, Thapar Institute of Engineering & Technology Patiala, Punjab, India
Email id: santosh.sonar@thapar.edu

To improve the learning experience of instructors and students in higher education, educational software and multimedia platforms are becoming too much popular nowadays. These technological developments have transformed the teacher design work from faculty centred to a learner-centred and service-oriented educational model. Several attempts have been made using interactive technologies to improve learning scenarios in classrooms and laboratories. In this paper, the need for teaching interventions, implementation and assessment to enhance the learning experience of the TIET students are discussed. The same is applicable to any other institute of higher education. Third year EIC students are selected as the targeted audience, and the concerned subject is power electronics and drives (UEE701). A set of descriptive and score-based questions are prepared to assess the interventions used. A graphical approach is adopted to analyse the feedback received from the students. To justify the efficacy and implementation of the proposed interventions, relevant pieces of evidence are analysed and some sample copies of supporting documents are presented as references.

TEACHING INTERVENTIONS AND ASSESSMENT IN ENGINEERING EDUCATION

Santosh Sonar
Electrical and Instrumentation Engineering Department, Thapar Institute of Engineering & Technology Patiala, Punjab, India
Email id: santosh.sonar@thapar.edu

To improve the learning experience of instructors and students in higher education, educational software and multimedia platforms are becoming too much popular nowadays. These technological developments have transformed the teacher design work from faculty centred to a learner-centred and service-oriented educational model. Several attempts have been made using interactive technologies to improve learning scenarios in classrooms and laboratories. In this paper, the need for teaching interventions, implementation and assessment to enhance the learning experience of the TIET students are discussed. The same is applicable to any other institute of higher education. Third year EIC students are selected as the targeted audience, and the concerned subject is power electronics and drives (UEE701). A set of descriptive and score-based questions are prepared to assess the interventions used. A graphical approach is adopted to analyse the feedback received from the students. To justify the efficacy and implementation of the proposed interventions, relevant pieces of evidence are analysed and some sample copies of supporting documents are presented as references.

ASSESSING AND IMPROVING COURSE OUTCOMES IN A FINAL YEAR ENGINEERING COURSE THROUGH CLOSED LOOP TEACHING-LEARNING PROCESS

Udit Mittal
Gunjan Varshney Department of Electrical Engineering, J.S.S. Academy of Technical Education, Noida, UP, India
Email id: santoshuditmittal.eed@jssaten.ac.in

In Outcome Based Education (OBE), the student is at the centre of the learning process, and the teacher's role is to act as a facilitator, guide, and mentor. Course Outcomes (COs) are statements that are precise and quantifiable, which define the knowledge, skills, and attitudes that learners are expected to exhibit upon finishing a course in an engineering program. Education quality in OBE can be improved by implementing various assessment tools to evaluate the attainment of COs. Attainment of COs is followed by the attainment of program outcomes (POs), program specific outcomes (PSOs), achieving program educational objectives (PEOs), and Vision-Mission of any engineering program and institute. Non-attainment of specified CO targets is crucial before taking steps to bridge the achievement gaps in the curriculum, as it ultimately leads to the attainment of POs. This study demonstrates the impact of OBE on the attainment of COs in a final-year engineering course through a closed-loop teaching-learning process of CO assessment and fulfilment. The CO assessment methodology is supported by necessary mathematical calculations and illustrated through sample values. When the course is retaught, appropriate teaching-learning activities will be implemented to address non-attained COs in relation to the pre-specified target values.

ACTIVE LEARNING METHODS-APPLICATION AND ANALYSIS OF DIFFERENT STRATEGIES FOR IMPROVING TEACHING AND LEARNING

Jaswinder Kaur and Geetika Dua
Electronics and Communication Engineering, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: jaswinder.kaur@thapar.edu

Active learning is an instructional approach that actively engages students with the course study through group discussions, problem solving, case studies, role plays and other methods. Active learning approaches place a greater degree of responsibility on the learner than passive approaches such as lectures, but instructor guidance is still crucial in the active learning classroom. Active learning activities may range in length from a couple of minutes to whole class sessions or may take place over multiple class sessions. Active learning activities involve students in deep rather than surface learning and enable students to apply and transfer knowledge better. In this paper, different active teaching & learning techniques and their efficacy are presented. These techniques are often perceived as "fun", yet they are frequently more effective than lectures at enabling student learning. These teaching approaches range from short, simple activities like problem solving and paired discussions, to longer, involved activities or pedagogical frameworks like case studies, role plays, and structured team-based learning.

REDESIGN OF A MODULE FOR LEARNING BY DOING

T.P. Singh[1], Ajay Batish[2], Anu Mittal[2]
[1]L.M. Thapar School of Management, Patiala, Punjab, India
[2]Mechanical Engineering Department, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: apal_blas21@thapar.edu

This paper presents an approach to redesign a module to align it with the concept of learning by doing. The redesigned module has one lecture and two practical classes in a week contrary to three lectures and one tutorial in the currently offered course. The practical classes will be scheduled in the workshop and will include exercises on Method Study, Work Measurement and Ergonomics. These exercises will simulate industrial working and will be carried out by teams of students. Teams will include Activity Performing Teams, Time Study Teams, Videography teams and presentation teams. New aims and objectives, threshold concepts, learning outcomes and session plan have also been designed for the module. The session plans include description of teaching and learning activities. The design is inclusive as all students will be able to perform activities, make presentations and learn by doing. The new design of the module includes active leaning on real world problems and situations, has a component of flipped approach, group work, self-regulation and problem-based learning. The redesigned module has appropriate components of formative assessment, summative assessment and peer assessment. Assessment components and methods are aligned with module outcomes. A course on Work study and Ergonomics is being presently taught in the curriculum of BE Mechanical Engineering and BE Mechatronics Engineering in the final year as an elective course. The module is really sought after and generally a large number of final year students opt for this elective course. This course focuses on two very important aspects of working in any industry. First, ‘Productivity of the company’ through efficient working and reduction of waste of all resources of materials, energy, manpower and machines and second to ensure health and safety of the employees carrying out various operations. Two major topics in the module are ‘ Work Study’ and ‘Ergonomics’. Work study further focusses on two very important parts of work in the industry, that is, ‘Method study’ and ‘work Measurement’. Method study evaluates systematically the present methods of doing work and evolves new improved methods which are efficient, cost effective and safe for humans to perform. Work measurement is a technique to calculate time for doing various types of work which becomes the basis for setting work norms in the industry and devising incentive schemes. The module is currently taught conventionally in the class room with three lecture classes and one tutorial class per week. It involves analysis of systems and design of new methods or incentive schemes. In the previous years, analysis and design methods were taught with the help of examples and data taken from the text books. Of late, it was realized that students are not really very excited in the classes and take this course as another course which will give them good grades and

also some insight into efficient ways of working in industry. It was felt that this course can be taught in a way that will involve a lot of experiential learning on the part of the students, experience of which will always remain with the student. To make the course experiential, the teacher created a lot of exercises for method study, work measurement and ergonomics. In these exercises, teams of students, each having 4-5 students were (i.e. Performance teams, Videography teams, time measurement teams etc). The teams were given a task similar to a task in the industry. While the performance was going on, the other teams were making a video or noting the time using a stop watch. The videos were then run carefully to find out the deficiencies in the methods of performance and to identify areas of improvement. This was done repeatedly for improvement in methods or for determining a day's work for an individual after allocating necessary allowances. These activities improved the student's involvement and understanding of theoretical concept. For mapping the module sessions across a period of teaching time, a research paper titled 'Rapid and creative course design: as easy as ABC?' authored by Clive Young, Nataša Perović was referred and made use of. The paper describes a technique of making a visual 'storyboard' outlining the type and sequence of learning activities required to meet the module's learning outcomes. The story board is prepared from the six pre-printed cards representing the type and sequence of learning activities required to meet the module or programme learning outcomes. The brief description of six pre-printed cards is given as follows: Acquisition: Learning through acquisition is what learners are doing when they are listening to a lecture or podcast, reading from books or websites, and watching demos or videos. Collaboration: Learning through collaboration embraces mainly discussions, practice, and production. Building on investigations and acquisition is about taking part in the process of knowledge building itself. Discussion: Learning through discussion requires the learners to articulate their ideas and questions and to challenge and respond to the ideas and questions from the teacher and/or from peers. Investigation: Learning through investigation guides learner to explore, compare and critique the texts, documents and resources that reflect the concepts and ideas being taught. Practice: Learning through practice enables the learner to adapt their actions to the task goal, and use the feedback to improve their next action. Feedback may come from self-reflection, from peers, from the teacher, or from the activity itself, if it shows them how to improve the result of their action in relation to the goal. Production: Learning through production is the way the teacher motivates the learner to consolidate what they have learned by articulating their current conceptual understanding and how they used it to practice. Using these pre-printed cards concept, all the sessions of the module were designed. Many of these sessions did not start with 'Acquisition'. These rather started with 'Investigation' or 'Practice' or 'Production' thus making it 'Learning by Doing'. Some part of the designed module was delivered in the tutorial classes in which the students did the assembly work while they were being videographed and timed. The students could easily understand the topics with an extensive coverage of theoretical concepts normally covered in the theory classes. Formal feedback taken from the students show a high level of satisfaction on their part and a very good level of understanding and retention of the topics covered.

UNDERSTANDING THE IMPORTANCE OF ASSESSMENT AND FEEDBACK IN TEACHING AND LEARNING

Parag Nijhawan
Electrical and Instrumentation Engineering Department, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: parag@thapar.edu

Nothing we do to or for our students is more important than our assessment of their work and the feedback we give them on it. The results of our assessment influence students for the rest of their lives' (Race, Brown and Smith, 2005). This quote really depicts the significance of assessment and feedback for our students. It is essential for learning and an indication of success (or failure). So, the whole purpose of assessment and feedback needs to be understood not only by the teachers but also make their students aware about the same. This will help the teachers to design suitable assessment methods and give constructive, timely and meaningful feedback to their students gracefully; and also help the students to understand the whole assessment process and its significance, and also to take their criticism/feedback in the positive manner to improve their learning. The students will definitely feel proud and responsible when they realize that they are being considered as partners in teaching and learning process. The reason for this is well supported by the following quote by Boud, 1995): 'Student can, with difficulty, escape from the effects of poor teaching, they cannot escape the effects of poor assessment. Assessment acts as a mechanism to control students that is far more pervasive and insidious than most staff would be prepared to acknowledge.' A well-designed assessment should be a mix of formative and summative assessment with emphasis given to formative ones. The following conditions should be taken into account when designing assessments: • There should be sufficient assessed tasks to capture sufficient student study time • Assessment demands should be designed so as to orient students to distribute appropriate amounts of time and effort across all the important aspects of the course • Tackling the assessed task engages students in productive learning activity of an appropriate kind • Assessment should communicate clear and high standards • Sufficient feedback needs to be provided, both often enough and in enough detail • Feedback should focus on students' performance, on their learning and on actions under the students' control, rather than on the students themselves and on their characteristics • Feedback should be timely: received by students while it still matters to them and in time for them to pay attention to further learning or receive further assistance • Feedback should be appropriate in relation to students' understanding of what they are supposed to be doing • Feedback needs to be received and attended to • Feedback should be provided in such a way that students act on it and change their future studying I also decided to take this intervention in a third year course entitled 'Innovation and Entrepreneurship.' When I took this course for the first time in July-Dec., 2018, I decided to make the

students understand the significance of this course and its relation with their branch of engineering, before covering the content in the class. Even the assessment part of the course was also made available to them in the first class. The class was acquainted with the importance of each assessment component associated with this course. The continued assessment and feedback technique was thought of and implemented in this course. There was also a need to monitor the progress of the students, and their level of engagement. Therefore, I used to have informal discussions with the students inside and outside the class to assess their level of understanding and engagement. The SRS conducted by the institute, and & lsquo; Course Instructor feedback for the 'Innovation and Entrepreneurship' course, clearly suggest that the students were pretty happy and satisfied with the contents, and the manner in which the whole of the course was covered and assessed in the class. In the end, I would like to conclude saying that 'no teaching and learning is complete without authentic assessment and feedback.

BRIDGING THE GAP BETWEEN THEORY AND PRACTICE: LEVERAGING EXISTING LABORATORY INFRASTRUCTURE

Saurabh Bhardwaj[1], Meenakshi Rana[2], Surya Prakash[1]
[1]Electrical and Instrumentation Engineering, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
[2]School of Mathematics, Thapar Institute of Engineering & Technology Patiala, Punjab, India
Email id: saurabh.bhardwaj@thapar.edu

Earlier there were no any high end and learning means available. The uberization of everything that is study resources, transport resources, sale & purchase industry has considerably witnessed that the learning happening through e resources has put an influence on the customer mindset also. The learning available to customers in the form of analysis carried out by previous users on various websites has affected decision making of customers in every field. Convenience is a huge selling point which has made shift in the eating habits of people on a global scale. The mobile application has made all traditional modes of business outdated and generated amazing new possibilities in business. It has played a key role in revolutionizing the food delivery service; it has contributed the changes in the consumer preferences as their dependency of technology has motivated them to do everything online comprising getting cooked meal delivery to their doorsteps (Jyotishman Das, 2017).

STUDYING THE STATUS OF OUTCOME-BASED EDUCATION IN EDUCATIONAL INSTITUTIONS: A SYSTEMATIC LITERATURE REVIEW

Shiekh Irfan Ul Islam and Siddi Sood
School of Education, Lovely Professional University, Phagwara, Punjab, India
Email id: sheikh.irfan9@gmail.com

Outcome-based Education (OBE) is an educational approach that focuses on measuring the outcomes or results of learning, rather than just the process of learning itself. OBE has been widely adopted in many countries around the world, particularly in vocational and professional education. The present study focuses on studying the status of OBE in educational institutions, that otherwise practiced traditional and content-based education. The purpose of reviewing the status of OBE in educational institutions is a crucial step in ensuring that students receive a high-quality education that prepares them for success in their future careers. The methodology followed for the present study is a systematic literature review which has covered a range of studies from the year 1996 to 2023. It is going to examine 50 selected studies from India and the foreign lands to analyze the trends in OBE in educational institutions. Based on this analysis, the present review will try to report the trend in the implementation of OBE in foreign higher education institutions and those in India along with the identification of research gaps and suggestions for further researches.

RETHINKING THE IMPLEMENTATION OF ARTIFICIAL INTELLIGENCE IN EDUCATION

Mamta Sharma[1], Pratibha Thakur[2], Sonika Singh[2], Neha Ugyal[2]
[1]Punjab Technical University, Kapurthala, Punjab, India
[2]Chandigarh Group of Colleges, Landran, Mohali, Punjab, India
Email id: thakurpartibha036@gmail.com

The emergence of artificial intelligence (AI) has paved the way for researchers to understand the concept of digital learning through artificial intelligence. This study's primary purpose is to analyze AI's role in enhancing digital learning. The study was conducted among diverse respondents in the Indian context. Since AI has become an essential technological skill in the 21st century, educators must combine AI and digital technology to equip learners with the necessary abilities and mindset through AI-driven technologies. These key considerations all together present an innovative model for AI learning. The findings of the study have uncovered the importance of AI in education as people in today's competitive scenario are highly using AI to gain knowledge and boost their skills.

ALUMNI FEEDBACK ON OUTCOME BASED EDUCATION: A COMPARATIVE ANALYSIS OF SELECTED PUBLIC AND PRIVATE TECHNICAL INSTITUTIONS OF NORTH INDIA

Rohit Gupta and Sukhpreet Kaur
Chitkara Business School, Chitkara University, Punjab, India
Email id: sukhpreetkaur358@gmail.com

Today, lifelong learning is a way of life, and Indian institutions seized the chance to help their graduates get ready for career advancement by providing executive master's program. In this article, alumni survey results on program relevance, Program Goals (POs), and Program Educational Outcomes (PEOs) from the period of July to August 2022 are presented. The alumni were provided a set of self-administered survey questionnaires via email and postal mail. Their feedbacks would be used to update this program POs and PEOs to ensure their appropriateness and relevancy. According to survey findings, graduates had positive perceptions of POs and PEOs overall. In addition, the variability for all POs and PEOs are less than 1.0, which shows common agreement on the perception of importance by the alumni.

DOES GAMIFICATION EFFECT STUDENT LEARNING ABILITIES? EVIDENCE FROM SELECTED PRIVATE DEEMED UNIVERSITIES OF NORTH INDIA

Gunjan Grover and Sukhpreet Kaur
Chitkara Business School, Chitkara University, Punjab, India
Email id: sukhpreetkaur358@gmail.com

The literature suggests that gamified learning interventions could improve learning and boost student engagement. We empirically examined the effects of intrinsic and extrinsic motivation on the participation and performance of more than 200 undergraduate students in an online gamified learning intervention. The paper contributes in a number of ways. The development of an online gamified learning intervention is outlined along with the key principles that must be included for a learning intervention to be considered gamified. We discover that gamified learning interventions enhance students' learning. Second, our findings demonstrate that while gamified interventions have a generally beneficial effect on student involvement, their effectiveness differs depending on whether the student is motivated internally or externally. These findings will be useful for teaching and learning professionals who want to improve student engagement and learning while working in a variety of educational environments and at all educational levels.

STUDENT CENTERED LEARNING PRACTICES - STRATEGIC CONSIDERATIONS TO STIMULATE EFFECTIVE LEARNING

Hardik Dhawan[1] and Rama Sharma[2]
[1]Himachal Pradesh University Business School, Shimla, Himachal Pradesh, India
[2]Chandigarh Business School of Administration, CGC Landran, Mohali, Punjab, India
Email id: Hardik.5284@cgc.edu.in

The instructor provides students with opportunities to learn independently and from one another and coaches those in the skills they need to do so effectively. The Student Centered Learning (SCL) Practices includes such techniques as substituting active learning experiences for lectures, assigning open-ended problems and problems requiring critical or creative thinking that cannot be solved by following text examples, involving students in simulations and role plays, and using self-paced and/or cooperative (team-based) learning. Properly implemented Student Centered Learning Practices can lead to increased motivation to learn, greater retention of knowledge, deeper understanding, and more positive attitudes towards the subject being taught. This review outlines encouraging and discouraging factors in stimulating the adoption of deep approaches to learning in student-centered learning environments. Through this study an attempt has been made to addresses few research questions that what are the characteristics of student-centered learning practices and how Student Centered Learning Practices implemented. What are the salient contextual factors (e.g., systems, structures, policies, procedures etc.) associated with the implementation of SCL practices? How do they support, impede, and otherwise shape the adoption, development, and implementation of SCL approaches?

CAPSL: AN INITIATIVE OF THAPAR INSTITUTE TOWARDS CONTINUOUS IMPROVEMENT OF OUTCOME BASED EDUCATION

Rajesh Khanna, Dwarikanath Rath and Ajay Batish
C-4 Thapar Technology Campus, Bhadson Road, Patiala, Punjab, India
Email id: rkhanna2001@gmail.com

TIET has set up a Centre for Academic Practice and Student Learning (CAPSL) to expose the 'entire faculty to in-house learning modules including e-learning to hone pedagogical skills. The entire training program is divided into two certificates Viz: New Directions program (NDP) certificate and Advanced Development Program (ADP) in teaching and learning certificate. Continuous professional development modules and certified programmes are delivered by faculty trained from Trinity College Dublin. The training programmes have been developed based on core needs identified in Indian context and adapted to reflect the specific academic needs of Thapar faculty. The training of all academic staff and on-going professional development has been instrumental in establishing the culture necessary for implementing the outcome-based education. Institute has recognized key academic staff across different disciplines with specific interest and knowledge of different aspects of higher education pedagogy, and got trained them at Trinity from January 2018. This paper presents the journey of CAPSL from handholding to becoming independent and now training faculty of other institutes also.

IMPROVED ACTIVE STUDENT ENGAGEMENT USING GROUP CLASSROOM RESPONSE SYSTEM (GCRS)

Rajesh Khanna and Surbhi Sharma
ECED, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: parag@thapar.edu

Student engagement is critical to academic success. Knowing what students have learnt in the class is important for the instructor. New Directions programme at Thapar Institute encouraged us to reflect on how we can engage students in critical and higher order thinking skills, Group Classroom Response System (GCRS) teaching technique is an effective way to improve student engagement and are an important component of evidence-based practice. How students should be encouraged to practice and learn regularly, how to increase group activity like think pair and share in the class, and how to check our own teaching performance? By engaging their minds in class, "GCRS makes students active participants in the learning process." GCRS works well both for large and small classes. Regardless of the class size, the instructor can always gauge student understanding. Based on the feedback it became evident students understood the importance of basic concepts (Average 82%), improved think, pair and share activity (average 75%) and promoted collaborative learning (Average 76%), improved their active learning (average79%) and felt motivated for GATE (Average 68%).

IMPLEMENTATION OF INNOVATIVE TEACHING TECHNIQUES FOR BETTER LEARNING AND UNDERSTANDING OF UNDERGRADUATE ENGINEERING STUDENTS

Ruchika Lamba[1], Gagandeep Kaur[1], Anterpreet Kaur Bedi[1], and Amanpreet Kaur[2]
[1]Department of Electrical and Instrumentation Engineering, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
[2]Department of Electronics & Control Engineering, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: ruchika.mehta@thapar.edu

In this paper, effort to involve students of undergraduate Electronics (Instrumentation & Control) engineering has been made. The learning and understanding of any undergraduate student is very important as they are going to implement the knowledge attained during their four-year engineering programme in their professional career and to achieve heights. The conventional methodologies of teaching need some creative and innovative ways of making them understand whatever course is being taught to them. In the course of UEI607, a sample group of 25 students was considered as a case study to apply the innovative technique of sharing the knowledge gained through use of available resources like internet, books, research articles, peer learning and classroom teaching. The methodology of think pair and share through which they help each other to learn and understand has shown certain innovations. Think pair and share technique has shown 22.4% improvement in their performance in examination as well. In this work, it is proved that innovative ways of teaching, adopted by teacher in the classroom, increases the interest of students in learning as well.

A PARADIGM SHIFT IN THE FIELD OF EDUCATION WITH CHATGPT: A REVIEW

Anterpreet Kaur Bedi[1], Gagandeep Kaur[1], Ruchika Lamba[1], Manpreet Singh[2]
[1]Department of Electrical and Instrumentation Engineering, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
[2]Department of Civil Engineering, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: anterpreet.bedi@thapar.edu

A new writing tool, ChatGPT, introduced in November 2022, has recently gained enormous attention. ChatGPT is a strong AI text generator tool utilized in the development of conversation AI applications, such as chatbots, where it can generate responses similar to the ones coming from an actual human. Earlier, Google search engine was supporting the research and knowledge enhancement by providing various resources to the learner. Human cognition was important while extracting the fruitful information from these resources. A paradigm shift in the year of 2022 is witnessed due to ChatGPT applications, utilization and resource sharing in every field of human life, i.e., not only education industry, but also from day to day life to various food, travel, tour, medical industries, etc. In due course of time, a tremendous change in human perception will be witnessed. Presently, within 5 months of ChatGPT, three important factors have come up: convenience, time saving and ChatGPT's expertise in every field, which has proved chatbot to be the next most demanding robot. This paper aims to review this powerful language generation model in the current education scenario. It aims to discuss how AI model has affected the human thought process and reduced the human efforts.

EDUCATIONAL IMPLICATIONS OF VYGOTSKY'S THEORY ON TEACHING AND LEARNING PRACTICES: A CONSTRUCTIVE CASE STUDY

Suman Bhullar[1], Loveleen Kaur Brar[2] and Neeru Jindal[2]
[1]EIED, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
[2]SPMS, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
Email id: brarloveleen@thapar.edu

Education is an important strategic factor for the economic augmentation of a community resulting in enhanced human capital and an up gradation in quality of life. The broadening of horizons due to technological advancement and productivity with a flavor of creativity empowers individuals and the community. The progress of a community is determined by the level of knowledge and its unhindered flow among its members. It is decisive in securing commercial and communal momentum and enhances revenue circulation. Lev Vygotsky was a Russian psychologist who developed the sociocultural theory of cognitive development – social interactions guide/mediate learning abilities. In this paper, a case study is presented based on the principle of zone of proximal detection (ZPD) in student learning and the role of educational scaffolding in bridging the same. The case study strengthened the idea that community intercommunication plays a critical role in a student\'s learning process and what students can do today with assistance; they will be able to do it by themselves tomorrow.

ROLE OF AEROBIC FITNESS AND PERSONALITY ON ATTENTIONAL NETWORK TASK PERFORMANCE AND TASK LOAD PERCEPTION

Harshit Katoch[1] and Naveen[2]
[1]Department of Psychology, Punjabi University, Patiala, Punjab, India
[2]Psychology Section, MMV, Banaras Hindu University, Varanasi, Uttar Pradesh, India
Email id: hkatoch55@gmail.com

It is believed that physiological aspects of the body affect the psychological state of the human mind; thus, the association between aerobic fitness, personality with attention, and task load perception captured the imagination of the researchers. The present study aims to determine the effect of aerobic fitness and personality on attentional network task performance and task toad perception. Fifty participants completed the Rockport one-mile test and provided responses to the personality questionnaire; later, they performed the attentional network task and rated the task load on the NASA Task Load Index (TLX). The results confirmed that aerobic fitness is positively related to alertness. A positive relationship was found between extraversion and mental demand (NASA TLX) and a negative relationship between extraversion and performance. The study's findings may be applied to educational settings, counselling and sports. The study suggested an association between physical fitness and alertness; thus, it is advised that people should be encouraged to indulge more in aerobic exercises to improve cognitive performance.

DAILY REVIEW: I AM NOT PAPPU

Mandeep Singh
Electrical and Instrumentation Engineering Department, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
Email id: mandeep@thapar.edu

A popular term, “Pappu”, is used in this intervention. It refers to a simple and innocent boy. When used in a derogatory sense, it could mean “naïve” or “dumb” and also refers to a duffer. This term is the “in-thing” amongst Indian Youth. This intervention was introduced to Under Graduate Final Year students of Bachelor of Engineering in Electronics Instrumentation and Control), in the course “Advanced Process Control”. The Group had the strength of 58 students. The selected students are given a challenge, “You are Pappu. Prove me wrong.” He/she is supposed to review some points discussed in the class, which may be a new term or concept or formula or new definition. As the student gives his/her feedback which is a valid point and not a repetition of his/her mate, they are asked to sit down. If someone remains to stand, he/she is declared “Pappu” till he/she can cover his/her tag in the next session. A survey was conducted, and feedback was obtained on a (1-5) point scale probing the effectiveness of this intervention related to alertness, interest in the class, retention, shedding inhibitions, and grasp of the subject. The survey results indicated that the intervention scored well in all five objectives.

EXTENT AND DIMENSIONS OF UNIVERSITY STUDENTS' CYBERLOAFING BEHAVIOR: GENDER AND INTERNET EXPERIENCE AS CONTEXTUAL CORRELATES

Naman Sharma[1], Rizul Kalra[1], Gagandeep Kaur[1], Deler Singh[2]
[1]Department of Electrical and Instrumentation, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
[2]Department of Humanities and Social Sciences, Jaypee University of Information and Technology, Waknaghat, Solan, Himachal Pradesh, India
Email id: namankishore615@gmail.com

The Internet enables employees to be more productive than ever before, but it also allows employees a new way to escape from work-cyberloafing. Prior research in the area of cyberloafing focuses on the employees in a work place setting where the extent of cyberloafing behavior is judged in the employees. The current study focuses on identifying various factors of cyberloafing along with the extent of this behavior from an educational setting angle. Firstly, an extensive literature review has been made to understand the concept of cyberloafing from different angles,namely, workplace and educational institutions. Secondly, various factors of cyberloafing have been identified and extent of cyberloafing from an educational setting has been studied, supportedby appropriate theoriesand tests. The study suggests eight major dimensions/factors of cyberloafing namely,General updating/entertainment, online reading, accessingcontent online, accessingnon-work related information, real time updating, gambling/networking, online transactions and maintaina web page. Also, it was foundthat the studentsspend most of their time visiting non-jobrelated, entertainment and general news websites and chatting online. This all leads to cyberloafing and it is becoming a major concern for industry and academia.

EFFECTIVENESS OF STUDENT CENTERED APPLICATION BASED TEACHING LEARNING APPROACH AMONG UNDERGRADUATE STUDENTS

Sunil Kumar Singla[1], Lovleen Kaur[2] and Gagandeep Kaur[1]
[1]Department of Electrical & Instrumentation Engineering, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
[2]Department of English, DAV College, Amritsar, Punjab, India
Email id: ssingla@thapar.edu

In this paper the student centered learning is considered as primary factor towards the ultimate goal of achieving effectiveness in learning and implementation of the knowledge acquired by the student. The student centered application based teaching learning approach among undergraduate students has been considered here. The intervention to understand the relevance of application based teaching is the case study. The fourth year course entitled 'Virtual Instrumentation' which is part of the Electronics (Instrumentation and Control) Engineering Programme. And it was applied on a group size of 20 students. Since this student centered application based teaching learning approach was applied on the final year Electronics (instrumentation and control) engineering students who will graduate and will go to the outside world as a brand ambassador of Thapar Institute of Engineering and Technology. This intervention was applied to enhance the capabilities of the students so that they will be able to define a problem, apply the different conceptslearned in the classroom for the practical applications and analyze the final outcome to reach to an optimum solution (Think, Pair and Share). The student centered application based teaching learning approach is very much helpful for students and it also makes the subject interesting. While thinking about the logic required to make virtual instrumentation programs and then sharing those logics with peers sometimes leads to more effective solutions to the problems undertaken. So it can be concluded that think, pair and share activity has enhanced the programming skill of the students. Also, the group of students who lack the programming skill also started developing programs at their own. Moreover, by discussing and learning the new ideas from the students will increase teachers' skill and knowledge also.

OUTCOME BASED EDUCATION: A BIBLIOMETRIC ANALYSIS FOR ASSESSING FUTURE TRENDS TOWARDS QUALITY EDUCATION FOR AN INDIVIDUAL

Amit Kumar Bhardwaj[1] and Seema Bawa[2]
[1]L M Thapar School of Management, Thapar Institute of Engineering & Technology Derabassi Campus, Mohali, Punjab, India
[2]Computer Science & Engineering Department, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: akbhardwaj@thapar.edu

Outcome-based education (OBE) is an approach that focuses on defining measurable learning outcomes and aligning instructional strategies and assessment methods to achieve those outcomes. OBE can help the world achieve its sustainable development goals (SDGs) by ensuring students develop the knowledge, skills, and competencies to address complex social and environmental challenges. This research article highlights the journey of the "Outcome-based education" discussion in worldwide research viz., past, present research affairs, and future. The present study also shows a bibliometric analysis of 532 records related to "Outcome-based education" by collecting the data from the Web of Science (WoS) from 1993 through 2022. The bibliometric results have shown year-wise publication trends, prominent publishers, most cited articles, most productive countries, prominent authors, and institutions. Further Netmap analysis done through VoS viewer software illustrates the growth of "Outcome based education" in the past, present, and future. Bibliometric and network analysis results from this research will significantly facilitate an understanding of the progress and trends for "Outcome-based education."

STUDENTS' LEARNING STYLES AND MOTIVATION IN CLASSROOM

Daljeet Singh
Department of Mechanical Engineering, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
Email id: daljeet.singh@thapar.edu

A study of the diverse student learning styles and its relationship with student motivation in the classroom has been presented. The significance of an awareness and understanding of different types of learners is emphasized. The methods or activities suggested by researchers to accommodate the needs of diverse learners are presented. A few novel activities that have been used in both small and large engineering classes are presented. The use of models and animations for visual learning and a simulation game for active / kinaesthetic learning has been discussed. The benefits of these interventions and the associated limitations are also discussed. It is suggested that similar activities if planned carefully for the different types of leaners, even in a few sessions, can significantly increase the students' motivation in the classroom. The cultural differences between the students in the west and their Asian counterparts are also highlighted and may give important insights into the learning styles, behaviour and motivation of the students.

OUTCOME BASED EDUCATION: EXPECTATIONS AND CHALLENGES IN RECENT TIME

Aparna Sharma and Manju Kundu
School of Liberal Arts, Noida International University, Noida, Uttar Pradesh, India
Email id: manjukundu2129@gmail.com

Learning gives creativity, creativity leads to thinking, thinking provides knowledge, and knowledge makes you great. : -Dr. A. P. J. Abdul Kalam Outcome-Based Education (OBE) has been gaining popularity in recent times, as educators and policymakers seek to ensure that students are equipped with the necessary knowledge, skills, and attitudes to succeed in their careers and in life. However, while OBE has many benefits, it also presents a number of challenges that need to be addressed in order to achieve its full potential. Outcomes-Based Education (OBE) sees itself as a progressive change in traditional educational practises, with the goal of ensuring academic success for all students. It is an approach to education that focuses on defining and measuring the desired learning outcomes of students. It ensures that assessments are aligned with the desired learning outcomes, making it easier to measure the effectiveness of the learning experience. This paper re-evaluates OBE from a multiparadigm organisational and administrative perspective. This paper also examines various challenges that emerged after conducting a literature review. One of the expectations of OBE is that it will lead to improved student outcomes, including higher levels of achievement, better preparedness for the workforce, and increased engagement in the learning process. To achieve these outcomes, educators must design clear and measurable learning objectives, align instructional activities with those objectives, and assess student performance against those objectives. Another expectation of OBE is that it will encourage more collaboration between educators, employers, and other stakeholders in the learning process. This collaboration can help to ensure that the skills and knowledge being taught in the classroom are relevant to the needs of the workforce and that students are well prepared for the demands of their chosen careers. There are many challenges such as: • significant amount of time and resources to implement effectively. • Sometimes it lead to a focus on standardized testing and a narrow definition of success which came up with lack of flexibility. • to implement in environments where there is resistance to change or a lack of support from stakeholders OBE has been widely adopted in higher education institutions around the world, with many educators seeing it as a more effective way of preparing students for the work force and ensuring their success in life. Some aspects of outcome-based practise that empower students and teachers, a large portion of the system is still ensconced in a framework that strives for structure and control.

IMPLEMENTATION OF OUTCOME-BASED EDUCATION WITHIN THE FRAMEWORK OF UGC QUALITY MANDATES

Neha Srivastava[1], Amita Vajpai[2], Mala Tandom[1], Pallavi Asthana[3] and Sudhanshu Tyagi[4]
[1]Amity Institute of Education, Amity University, Lucknow, Uttar Pradesh, India
[2]Lucknow University, Lucknow, Uttar Pradesh, India
[3]Amity School of Engineering & Technology, Amity University, Lucknow, Uttar Pradesh, India
[4]Thapar Institute of Engineering and Technology, Patiala, Punjab, India
Email id: s.tyagi@thapar.edu

UGC quality mandates advocate the importance of Learning Outcome Based Education (LOBE) for higher education to establish the clarity of educational objectives and provide a framework to achieve them. This needs an organized curriculum, instruction, and assessment that can significantly improve learning. Program objectives are well-defined for a program to impart education in a structured way. But it is also a fact that implementation of LOBE requires changes on many levels like curriculum design, Instruction methods, infrastructure, and facilities. This paper discovers the prevalent models supporting active learning models where instruction is segregated into smaller achievable outcomes to enhance students\' competencies and abilities. It also discusses the requirement of setting learning outcomes for program objectives that define achievable learning goals. This model follows the student-centric approaches to designing curriculum and sets the Learning outcomes at all levels as course outcomes, Unit outcomes, and lesson outcomes.

UNDERSTANDING THE VOICE AND EMOTIONs OF THE CITIZENS OF BRICS NATIONS ON OUTCOME BASED EDUCATION

Amit Kumar Bhardwaj[1] and Seema Bawa[2]
[1]L M Thapar School of Management, Thapar Institute of Engineering & Technology Derabassi Campus, Mohali, Punjab, India
[2]Computer Science & Engineering Department, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: s.tyagi@thapar.edu

BRICS is a group of five emerging economies that include Brazil, Russia, India, China, and South Africa. These nations have a combined population of over 3.6 billion people, accounting for approximately 42% of the world\'s population. As emerging economies, these nations face various challenges related to poverty, inequality, and environmental degradation. The Sustainable Development Goals (SDGs) provide a framework for addressing these challenges and achieving sustainable development. This article highlights the 4th SDGs, named outcome-based education (OBE) practices in BRICS nations for quality education. In the current scenario, Google trends analysis and Twitter both platforms are famous for listening to the voice of the citizen of a person a-group, or a nation. Understanding the public opinions and sentiments expressed through tweets can greatly help worldwide political and commercial use. Further, this research article has done the Google trends analysis and extracted tweets for sentiment analysis for OBE practices in BRICS nations. R and its associated packages are used to display word clouds and bar diagrams to depict the subjectivity and polarity (mood) of the public of BRICS nations about the OBE. This research work can help the government of BRICS counties to formulate outcome-based education policies to manage the opinions and emotions of the people for the prosperity of their respective countries. This research can attract and motivate other researchers to work in this direction.

EVALUATING THE EFFECTIVENESS OF OUTCOME-BASED EDUCATION: A SURVEY OF STUDENT PERCEPTIONS AND COMPETENCY SKILLS ACHIEVEMENT PROCESSES

Meenakshi Rana
School of Mathematics, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: mrana@thapar.edu

Outcome-Based Education (OBE) is a student-centered approach to education that focuses on the attainment of measurable learning outcomes. This study aims to evaluate the effectiveness of OBE by assessing both student perceptions and the process of achieving OBE. The study will use a survey method to collect data from a sample of students and has two primary objectives: first, to assess students' perceptions of OBE and their understanding of learning outcomes, and second, to evaluate the process of achieving competency skills using various parameters such as content delivery, assessment schedule and teaching pedagogy. The study will provide insights into the effectiveness of OBE, as well as provide recommendations for improving the OBE process. The study's findings will enable the identification of gaps in existing practices and provide insights for possible areas of improvement for the OBE process.

OUTCOME BASED EDUCATION PERSPECTIVES AND PRACTICES

Saru Joshi[1] and B.P Sahu[2]
[1]*Department of Education, University of Science and Technology, Baridua, Ri-Bhoi, Meghalaya, India*
[2]*Department of Centre for Distance Learning, North Eastern Hills University, Shillong, Meghalaya, India*
Email id: Sarujoshi2013@gmail.com, bpsahu@gmail.com

This paper is an attempt to study the practices and perspectives of outcome-based education. Several books, journals, research papers, google, literature were taken as a source of cumulating to reach to its conclusions. The study consist of objectives were i) To identify the different perspectives of Outcome Based learning in contemporary education system ii) To understand the importance of practices of Outcome Based Education. iii) To identify the Curriculum for Outcome Based Education. and research questions followed were i) What are the different perspectives towards the Outcome Based Education in Contemporary Education? ii) Why should institute practice Outcome Based Education? iii) What should be the curriculum for Outcome Based Education.? . This paper has also emphasis on curriculum focuses on experiential learning, and students centric curriculum with the pattern of assessment and Evaluation along with ABC (Academic Bank of Credits) to make learning system more enjoyable and flexible from every aspects. The analysis and findings reveal that, i) For the attainment of students' Holistic development the learners need to well equipped with the 21st century skills. ii) it helps in striving global economy in a highly technological world. iii) focused to "solve problems " iii) OBE is a flexible and it is students -oriented. iv) It aims at equipping learners with the knowledge, competence and orientations needed for success after they leave institution iv) Policy makers and stakeholders should frame the curriculum, students assessing system (Examination question pattern) and teaching methodologies in such a way that the students should realize the importance of OBE system. Further, it suggests that every educational institution should prepared to implement the OBE system of education.

FRAMEWORK FOR ESTABLISHING CORRELATION BETWEEN COURSE OUTCOMES AND PROGRAM OUTCOMES

Seema Shukla and Gunjan Ansari
Department of Information Technology, JSS Academy of Technical Education,
Noida, Uttar Pradesh, India
Email id: seemashukla@gmail.com

In OBE framework, student attainment is measured through PO attainment which in turn relies on establishing correlation between COs and POs. Each CO must be correlated with each PO with level 1 (Slight), 2 (Moderate) or 3 (Substantial). However, one of the key difficulties faced by OBE practitioners is that there are no standard approaches for establishing this correlation even within a single program itself. The objective of this paper is to propose an approach which can be followed by all OBE practitioners of a single institution. Although the proposed approach is illustrated for B. Tech. Information Technology (and allied) program, it can be applied to other domains as well and is based on matching the Bloom's Taxonomy level of PO with that of the CO and matching of keywords from the PO and CO under consideration. The framework can be automated with the help of an NLP based tool for establishing the said correlation. This approach was successful in the OBE practice of the B. Tech. (IT) program.

IMPACT OF LEARNING STYLES, SELF-ESTEEM AND PERSONALITY ON ACADEMIC ACHIEVEMENT OF UNIVERSITY STUDENTS: A GENDER COMPARISON

Nishtha Batra, Manreet Chahal and Sohinee Ganguly
School of Humanities and Social Sciences, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
Email id: nbatra_phd22@thapar.edu

The present study attempted to assess the impact of learning styles, personality and self-esteem on the academic performance of university students. Participants N=120 were 60 male students, mean age of 22 years and 60 female students, mean age of 22.5 years. Data was collected using Rosenberg's Self-Esteem Scale, John et, al's Big Five Inventory and O'Brien's Learning Style questionnaire. Descriptive statistics, correlation and regression revealed (using SPSS version 22) different learning styles, self-esteem, and personality factors had a significant relationship with academic achievement.

Reflection and Education

REFLECTIONS ON ASSESSING ENGINEERING STUDENTS' CONCEPTUAL KNOWLEDGE USING TWO TIER CONCEPT INVENTORY ON BASIC ELECTRONICS

Rashpinder Kaur[1], Archana Mantri[2], Prathiba Nagabhushan[3], Gurjinder Singh[4] and Geetanjali[5]
[1],[2],[4],[5]Department of Electronics and Communication Engineering, Chitkara University Institute of Engineering and Technology, Rajpura, Punjab, India
[3]Department of Psychology, St Mary MacKillop College, ACT, Australia
Email id: jaasleen@yahoo.com

The current requirement of engineering education is to develop novel, student-centered, effective teaching, learning, and assessment techniques that will enable students to succeed as practicing professionals. The conventional assessment and evaluation methods, passive instructional strategies, are no longer sufficient to satisfy the intricate engineering education outcomes. Literature supports the idea that innovative assessment techniques are useful in getting insights into students' qualitative thinking, such as how they approach, apply their conceptual knowledge to solve given problems. This research work aims to propose a theoretical framework in which an assessment instrument is developed, administered, and validated with a probabilistic dichotomous Rasch model. A two-tier Basic Electronics Concept Inventory has been developed to assess students' conceptual knowledge and consists of 20 objective-type questions on the electronics fundamentals, where the first tier consists of one correct option and the other three are frequent distracters. BECI has been administered to 790 first year engineering students as a post-test and their scores have been analyzed using the Rasch model to validate whether BECI is actually assessing the students\' conceptual knowledge or not. The average post-test performance of top and bottom quarter of the participants is compared in order to discover test items and distracter options that should be modified to improve the quality of BECI as an assessment Instrument.

STUDENTS' FEEDBACK AS AN EFFECTIVE TOOL FOR SELF-ASSESSMENT AND REFLECTION OF TEACHING

N. Tejo Prakash
School of Energy and Environment, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
Email id: ntejoprakash@thapar.edu

Feedback is an important part of one's self-assessment and reflection. In teaching - learning process it has a much more significant effect and is considered as the most powerful moderator that enhances once achievement as a good teacher. A study was to carried out with underlying objective of gathering the feedback of students on the teaching of an under-graduate course on Energy and Environment, and understand the strengths and limitations associated with the teaching-learning process during the course. The feedback process used a modified version of SLAG instrument, designed by Vanderbilt University, USA, that suited the course and the type of responses intended. A Google Form was used for collating the opinions anonymously and identity was not recorded across the survey, with liberty to students to respond at will. 178 students out of 230 i.e., 77% responded to the request for the feedback. Although the feedback process had a moderate participation, the take-aways from the feedback had aspects that involved self-introspection (8%) and those that were encouraging (92%). The study also helped in reflecting on the initiative in general and the teaching methodology in particular resulting in modification in the very process of teaching-learning associated with the mentioned course.

PROBLEM-BASED LEARNING: USE OF PROBLEMS TO POWER LEARNING

M. Sudhakara Reddy
Department of Biotechnology, Thapar Institute of Engineering & Technology,
Patiala, Punjab, India
Email id: msreddy@thapar.edu

Problem-based learning (PBL) is a student-centric learning approach, where students learn a subject by working in groups to solve open-ended problems that drive motivation and learning. The intervention was introduced for the undergraduate classes in biostatistics subject. PBL approach has been adopted as many students were unable to understand the basic concepts of statistics and also unable to solve the related problems with a repeated explanation of the basics. Also students were unable to get good marks on their assessments. Students were divided into different groups and asked to select a topic of their choice in statistics and solve it by taking real-world problems. Each group of students were asked to submit an assignment by explaining the results and linking them to the basics.

Feedback was taken from the students to obtain their opinion on the Think, Pair and Share method of teaching. The students strongly agreed that the problem-based learning intervention really helped them to work in teams, improve their working skills and learning abilities. Students agreed that PBL helps think, pair and share, promote discussions and collaborations among students and improves learning skills. When asked whether students prefer traditional lecture or the think, pair and share method, 94% of students preferred the latter. In my view, PBL is a pedagogical tool that situates learning in complex problem-solving contexts and provides opportunities for students to consider how the facts they acquire relate to a specific problem at hand. Also, it helps students to become reflective and flexible thinkers who can use knowledge to take action. PBL has the advantage of suggesting a method to promote active and reflective knowledge-building-for-action.

TEACHER'S REFLECTION ON THE TRANSITION TO ONLINE TEACHING DURING COVID TIMES

Parag Nijhawan[1] and Parminder Singh[2]
[1]Electrical and Instrumentation Engineering Department, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
[2]Chemical Engineering Department, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
Email id: parag@thapar.edu

A new coronavirus, COVID-19, was proclaimed to be a global pandemic by the World Health Organization a year ago. As a result of this crisis, universities all across the globe had to scramble to respond. Without any forethought or preparation, schools, colleges, and universities shifted their pedagogical focus from traditional lecture hall presentations and in-person tutorials to the online learning environment. This was a significant obstacle for educators and students alike. Despite some early reluctance, many educators have shifted to using an online platform for instruction. This is because, first and foremost, the change occurred suddenly. Second, instructors lacked the flexibility to switch gears from one teaching method to another, and third, they lacked faith in their ability to confidently use digital classroom tools. Some instructors may have had no trouble with these variables, but opinions on the best approach to provide course material varied widely. This was the perfect reflection-in-action scenario for most of the teaching community. Educators had the chance to consider new ways of approaching their profession and their students. The online live lectures along with the recorded ones were a reflective pedagogy that was thought of during those tough times. The growth of curiosity, sincerity, and accountability may be attributed to the practice of reflective thinking. These three qualities contributed to a constructive attitude towards learning that relied on projects and real-world experiences. During the course of online teaching, effective engagement of students during laboratory hours was also an additional challenge. These limitations were taken care of by allocating small project work and simulation studies for the better understanding of the students. The students feedback suggest that their overall experience was joyful, interesting and quite informative. The students' results also suggest that they were able to understand and implement the fundamental concepts of the course which definitely led to their active engagement in the course.

ANALYSIS AND REFLECTION OF CLASS FEEDBACK IN ENGINEERING EDUCATION

Santosh Sonar
Electrical and Instrumentation Engineering Department, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
Email id: santosh.sonar@thapar.edu

There are two important teaching aspects in any kind of education, feedback and reflection. Though many of the concerned professionals don't bother about feedback. Generally, engineering education does not appreciate the role of feedback as a fundamental engineering teaching tool and loose many feasible opportunities for employing this tool. In this paper, the author discusses different issues and the importance of these methodologies in engineering education. The intervention has been used in the case of one small group consisting of thirty students (postgraduate) and another large group of strength ninety undergraduate students. The subject for UG and PG students was Power Electronics and Advanced Power Electronics. To analyze the effect and improve the understanding of concerned students, fifteen minutes in class feedback is taken based on the material taught to both groups of students. The results are presented in the form of tables and graphs. These intervention results are analyzed to improve the course delivery.

STUDENT FEEDBACK AND REFLECTION FOR TEACHING EFFECTIVENESS

Tejinder Paul Singh and Ajay Batish
1151 Civil Lines Patiala, Punjab, India
Email id: tpsingh@thapar.edu

Student feedback and reflection for teaching effectiveness Dr. T.P.Singh, Professor, L.M.Thapar School of Management, Dr. Ajay Batish, Professor, Mechanical Engineering Department Thapar Institute of Engineering & Technology, Patiala This paper presents a case study of an intervention carried out in a BE Mechanical Engineering class. It focuses on student feedback on their understanding & retention levels of a recently taught topic and the level of motivation for revising the topic at home. Low level of understanding, retention and motivation for self-study made the teacher reflect and modify his teaching method from deductive teaching to inductive teaching. Feedback taken after the intervention resulted in significant improvement. This experience of reflection, modification in teaching style and the resultant improvement brought a positive and extensive change in the teacher's understanding of the way today's students want to learn. The intervention included making a detailed lesson plan involving learning objectives, sequence of subtopics, teacher activities, student activities and recapitulation sessions. Subsequently, the class was engaged using the lesion plan. To take the feedback after the class, a questionnaire was prepared with multiple choice questions. The questionnaire was then administered in the in the tutorial classes. 42 students of the two tutorial groups gave feedback in a structured manner. The feedback was compiled, analyzed and conclusions were drawn. The students desired that the plotting of the control chart was taken up before a detailed coverage of the concepts and fundamentals. The teacher then reflected on the feedback and his own teaching style. Using Gibbs cycle for reflection, the teacher evolved an action plan after studying extensive literature on Inductive and Deductive teaching. The teacher made another lesson plan for the next lecture by incorporating the feedback, changing teaching method to predominantly Inductive teaching and conduct of the lecture. Feedback on the teaching of the new lecture was taken again using a specially designed questionnaire and analyzed. The response was compared with the response of the earlier lecture. The study showed a substantial improvement in understanding and retention. The study also indicated that the interventions and the modified approach of the teacher helped in motivating the students to study on their own and revise the topic at home. The students reported that the changed approach in which they learned to draw the charts themselves before detailed coverage of statistical concepts and fundamentals, made the class more interesting and effective. The study concludes that in today's times, the students can be attracted to attend classes only if the teaching-learning process in the classroom is interesting and effective. Every lecture should put the contents covered in a perspective and flow seamlessly ensuring student attention and involvement. The initiative of taking feedback to ensure the above, particularly when there was no problem reported by the students, reflects a good practice to change with the changing times and make continuous improvement.

UNDERSTANDING STUDENTS' TAKE ON EVALUATION EFFECTIVENESS FOR COHERENT COURSE OUTCOME

Asmita Pal[1] and Bonamali Pal[2]
[1]Thapar School of Liberal Arts and Sciences, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
[2]School of Chemistry and Biochemistry, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
Email id: apal_blas21@thapar.edu

Individuals refine the power of creative thinking by applying their knowledge and competencies through a deeper understanding and unique take on the topic. Recent pedagogical approaches focus on shaping the creative power of the individual acquiring knowledge in their specific domain of interest and enabling them to apply their hands-on expertise in the day-to-day tasks and professional field. The effectiveness of the learning and the absorption of the course objective is often judged using educational assessments. However, the idea of the assessment purpose is more complicated than assumed. The purpose of the evaluation for the course design lies at three different levels of analysis, often the – measurement level, decision level, and impact level. Hence special attention is needed to be paid to the mode of the assessment. Recently, the debate between the effectiveness of examination evaluation vs. assignment-based evaluations has arisen; with technology and a focus on holistic development, both modes have evolved with many pros and cons. Though the teaching method lies at the core of achieving the course outcome, the analysis and efforts done by the students are better predictors of the course's effectiveness. Pedagogical differences and classroom size often hinder the judgment of the practical student's absorption of the course learning. Coupled with anxiety and rising competition often, communication is not fruitful in the course designs. Many a time, it is also seen that grade increment policy adopted by institutes seems to provide biased results; for example, grade increment policy was caught on the rise during the times of covid in the educational systems to deliver desirable and accessible results for the students, thus neglecting the students' understanding into the courses offered. However, in the, the fear of positive teacher evaluation by the students has pushed teachers to mark students on a higher side of the grade scale, especially in the exam-based assessment. Hence through this paper, we try to derive data and information from the students from different disciplines in Thapar Institute, to look into the student's insight for better evaluation practices to gain the course's effective outcome.

DELIVERING HIGHER LEARNING OUTCOMES – THE NEUROSCIENCE PERSPECTIVE

Richa Nigam[1] and S. S. Mallick[2]
[1]Thapar School of Liberal Arts and Sciences, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
[2]Department of Mechanical Engineering, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
Email id: richa.nigam@thapar.edu

With student-oriented/outcome-based learning, several teaching-learning pedagogical practices and tools have been introduced over the last decade. However, selection of these tools should be based on course content which seemingly evokes different thinking patterns. Borrowing from Daniel Kahneman's work, we agree to the existence of fast and slow thinking brain where the former is related to intuitions, instincts and fast/short/quick activities, the latter involves deep level understanding of concepts and involve logical/critical thinking. Given these, teaching foundational concepts essentially involve deep brain regions that activates brain's metacognitive processes. These processes pertain to an understanding of one's own learning patterns and hence a reflection on the same. Such metacognition is essential in developing 'analyzing' capabilities and forms the basis for lifelong learning. The current study proposes that uninformed selection of learning tools might activate a learner's fast or slow thinking that is incongruent to the learning material which can be potentially detrimental towards achieving higher level learning outcomes.

REFLECTIONS ON THE PRACTICE AND ASSESSMENT METHODOLOGY OF BACHELOR OF ENGINEERING CAPSTONE PROJECTS

Inderveer Chana[1], Gagandeep Kaur[2] and Ashima Singh[1]
[1]Department of Computer Science and Engineering, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
[2]Department of Electrical & Instrumentation Engineering, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: ashima@thapar.edu

The intervention used here is based on Reflections on the teaching practices, arising out of dissatisfaction with existing arrangements Students were given a choice to select their own team of either 3-4 people and a list of appropriate project ideas was posted. A single panel of seven faculty screened the projects for novelty and aptness. Mentoring was introduced and two stage evaluation criteria was announced -mentor and panel. By creating a Project website, students could have a single point of information, had pre- defined guidelines, pre-announced evaluation schedule and guidelines, guidelines and examples of project documents etc. The introduction of single panel project screening and mentor association further strengthened the project development. They could appreciate the role of team work, proper documentation and new ideas and could effectively implement their theoretical knowledge in practical development, desired of every engineer.

Though it being a champion initiative from the perspective of the institute, students neither could recognize the rationale of the introduction of the initiative nor of team work, project documentation and inter-disciplinary skill development, a very necessary component of their employability thought to be achieved through designing and developing capstone projects.

STRATEGIES FOR ADDRESSING CYBERLOAFING IN HIGHER EDUCATION

Naman Sharma[1], Rizul Kalra[1], Gagandeep Kaur[1] and Gurvinder Kaur[2]
[1]Department of Electrical and Instrumentation, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
[2]School of Humanities and Social Sciences, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
Email id: namannsharma4@gmail.com

The emergence of digital technologies has transformed the way we interact with information and communication. In higher education, technology offers many benefits, from increased access to learning resources to enhanced collaborative opportunities. However, one challenge that has arisen is the prevalence of cyberloafing or cyberslacking - the act of using technology for non-academic purposes during class time or while engaged in academic activities. This behaviour is a growing concern as it can significantly impact student learning outcomes, instructor teaching effectiveness, and the overall quality of higher education.

In response to this issue, researchers have sought to understand the scope and impact of cyberloafing in higher education and to develop effective strategies for addressing it. One key approach to studying cyberloafing involves the development of reliable and valid measurement scales that can accurately capture the behaviour. This research involves the creation of assessment tools that can be used to measure the frequency, duration, and types of cyberloafing behaviours engaged by students.

In addition, studies have explored the potential of media in education as a way to minimize cyberloafing. For instance, the use of interactive and engaging learning tools can help keep students focused and minimize the temptation to engage in non-academic behaviour Similarly, establishing clear expectations and guidelines for technology use in the classroom can discourage cyberloafing and ensure that students remain accountable for their actions.

Overall, addressing the problem of cyberloafing in higher education requires a multifaceted approach that involves developing reliable measurement tools, establishing clear expectations and guidelines, and exploring the potential of media in education. By doing so, higher education institutions can create a more effective and engaging learning environment that supports student success and academic excellence.

AN EFFECTIVE AND EFFICIENT APPROACH TO GIVING STUDENTS FEEDBACK ON THEIR LEARNING

Manu Bansal[1] and Gagandeep Kaur[2]
[1]Department of Electronics & Communication Engineering, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
[2]Department of Electrical & Instrumentation Engineering, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: mbansal@thapar.edu

In this paper the importance of assessment literacy and feedback is considered as a major concern for both teacher and student. When the feedback is elaborated for students concern about the concepts they have learnt, it comes to notice they just focus on marks achieved rather than the mistakes pointed out by the teacher. If the sincerely look at remarks they can very well improve their learning. But giving a comprehensive feedback to students outlining common weaknesses and strengths requires special effort of teacher as well. The facility in Student Enhanced Learning through Effective Formative Feedback (SENLEF) is very much helpful for providing feedback on performances in the class about the assignments of the students and their basic understanding about the concept learnt. SENLEF has been successfully adapted and implemented to provide proper and appropriate feedback to each and every student enrolled in the course of "Introduction to Electronics Engineering". It is learnt that the statements of feedback can be more efficient if they focus on comprehensive statements which are time saving. And also briefly introduce the falseness in their understanding about the course undertaken. The students should be clear about the evaluation process and assessment criteria. Students need to be 'assessment literate' for better learning.

EFFECTS OF COVID-19 ON TEACHING AND LEARNING THROUGH TECHNOLOGY IN THE FIELD OF EDUCATION AT DIFFERENT LEVELS: A REVIEW

Ruchika Lamba, Anterpreet Kaur Bedi, Gagandeep Kaur and Swati Sondhi
Department of Electrical and Instrumentation Engineering, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
Email id: ruchika.mehta@thapar.edu

Almost all educational institutions had to switch to online learning platforms to continue the teaching process due to the pandemic. The use of online learning tools such as Zoom, Google Classroom, and Moodle has made the online teaching possible in schools and universities during the COVID-19 pandemic. The acceleration in the adoption of technology in education sector has led to significant changes in the way students learn and teachers teach. No doubt, the hybrid learning model that combines traditional classroom teaching with online learning has allowed students with greater flexibility in their studies and learning at their own pace. But, the use of this hybrid learning technology has led to serious harmful effects. The increased time in front of screen has led to serious physical health issues, reduced interaction among students decreasing the ability of students to build socially and emotionally. Also, the students are becoming over addictive towards the use of the devices for technology and losing interest in other activities. Also, it may not be possible for a teacher to provide the same level of interaction, feedback and support as in traditional class room learning. Therefore, a balance between this online teaching platform and traditional classroom teaching needs to be maintained for upkeep of high-quality education among students.

Project Based Learning

REDUCING SOCIAL LOAFING IN GROUP PROJECTS: SOCIO-STRUCTURAL ANTECEDENTS AND THEIR MANAGEMENT

Gurvinder Kaur[1] and Deler Singh[2]
[1]School of Humanities and Social Sciences, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
[2]Department of Humanities and Social Sciences, Jaypee Institute of Information Technology, Waknaghat, Solan, Himachal Pradesh, India
Email id: gurvinder@thapar.edu

Group work, Group learning, Group evaluation has been glorified, particularly in higher education for its obvious benefits. Group projects have known to lead to enhanced communication skills, interpersonal skills, peer learning as well as team building skills. The national as well as international accreditation agencies have also mandated group projects as an essential performance indicator that measures group learning and makes the students corporate ready. However, group evaluation is no without its challenges. Despite its obvious benefits, it might not result in expected learning.' Social Loafing' or 'Free riding' has been cited as the most important factor that dilutes this learning experience. The students' frustration, disillusionment and a sense of injustice at the end of the project when even the student who did the least gets the same marks is not a very positive picture of the teaching- learning-assessment relationship. The Teacher-Evaluator's inability to take corrective action despite the knowledge that all have not contributed equally is also frustrating. The paper studies the construct of Social Loafing through two theories; The Social Impact theory as proposed by Lantane and Karau & William's Collective Effort Model.

The paper attempts to

1. Explore antecedental factors of Social Loafing.
2. Using the above knowledge to propose proactive measures to reduce Social Loafing while assigning projects.

The research methodology followed by the paper is the practitioner –knowledge approach which uses reflective practice to form ideas. The classroom experiences are used to learn using theoretical basis reflectively and critically. Additionally, extant literature was used to extract and study factors that affect Social Loafing. Group size, project scope, group formation have been most cited in literature as structural factors that affect Social Loafing behaviour. Social factors in the form of-Disruptive behaviour, apathy and social disconnectedness -have received attention in literature on Social Loafing. Since Group projects are an integral part of Higher education in the current scenario, a knowledge of the factors that affect Social Loafing and designing strategies to modify these factors assumes a lot of importance from the perspective of learning and assessment. Hence, this study is highly relevant to the Institutions, students as well as the academicians.

UNDERSTANDING COMPLEX TECHNICAL CONCEPTS VIA ACADEMIC PROJECTS

Vikas Pratap Singh
Department of Civil Engineering, National Institute of Technology, Srinagar, Uttarakhand, India
Email id: vpsingh@nituk.ac.in

One of the prime objectives of the Outcome Based Learning is to enable students with the capacity to think innovatively and confidently for the successful applications of the academic concepts to solve real world problems. This article focusses on highlighting the role and significance of project-based learning in engineering education with the help of two case studies, wherein undergraduate students in Civil Engineering, have taken project works as a part of their academic curriculum. In the first case study, a group of students have taken a problem to study the complex phenomena of liquefaction of soils, whereas in the second case study efficiency of stone columns as one of the ground improvement techniques was studied. The important and notable thing in both these studies was the innovative alternatives used by the students in-lieu of the complex and costly test setup otherwise required. Also, the way students were able to communicate the test results and demonstrated the understanding of the underlying concepts of liquefaction and stone columns was praiseworthy. Another important aspect is that incidentally students involved in both these students were average as indicated by their academic performance indicators. From these two examples, it is evident that if academic curriculums are designed with equal or more weightage to the project-oriented courses, even the average students can understand the complex theoretical concepts easily, enhance their innovative thinking and above all, demonstrate confidence to tackle similar problems in professional practice.

A STRATEGY FOR IMPLEMENTATION OF PROJECT-BASED LEARNING IN CIVIL ENGINEERING CURRICULUM

Vikas Pratap Singh
Department of Civil Engineering, National Institute of Technology, Srinagar,Uttarakhand, India
Email id: vpsingh@nituk.ac.in

One of the prime objectives of the Outcome Based Learning is to enable students with the capacity to think innovatively and confidently for the successful applications of the academic concepts to solve real world problems. This article focusses on highlighting the role and significance of project-based learning in engineering education with the help of two case studies, wherein undergraduate students in Civil Engineering, have taken project works as a part of their academic curriculum. In the first case study, a group of students have taken a problem to study the complex phenomena of liquefaction of soils, whereas in the second case study efficiency of stone columns as one of the ground improvement technique was studied. The important and notable thing in both these studies was the innovative alternatives used by the students in-lieu of the complex and costly test setup otherwise required. Also, the way students were able to communicate the test results and demonstrated the understanding of the underlying concepts of liquefaction and stone columns was praiseworthy. Further, taking the existing Civil Engineering curriculum at NIT Uttarakhand as basis, a strategy is illustrated for the implementation of Project-Based Learning in undergraduate program leading to a Bachelor of Technology degree in Civil Engineering.

INTERVENTION FOR STIMULATING CREATIVITY AND FACILITATING LEARNING THROUGH GROUP WORK

Harjot Singh
LM Thapar School of Management, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: harjot.singh@thapar.edu

The paper describes an intervention related to outcome-based education. The intervention was carried out as part of a program called the 'New Directions' program conducted jointly by Thapar Institute of Engineering & Technology, India, and the Centre for Academic Practice and Student Learning (CAPSL), Trinity College, Dublin. It was carried out in a course entitled 'Marketing Management' taught to the first-year students of the MBA program. The intervention had three objectives, namely, stimulation of creative instincts, facilitation of group work, and familiarity with the concept of peer assessment. The students were required to participate in a class activity by self-selecting into groups. Each group was required to make a presentation to depict its philosophy (what the group stood for) and the mission (what the group intended to achieve in the two years of the MBA program) through brand elements like a brand name, a logo, a tagline, and a jingle. The groups were ranked on the basis of peer assessment. The limitations of this intervention were that it was carried out only in one section of one course and only in the first year of the MBA program.

USE OF 'CAD TOOLS' & 'ENGINEERING STANDARDS' BY UNDER GRADUATE STUDENTS IN A 'CORNERSTONE PROJECT' FOR 'CAPSTONE PROJECT' AND GRADUATE ATTRIBUTES

Ajayinder Singh Jawanda
Mechanical Engineering Department, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
Email id: India asjawanda@thapar.edu

The assessment of outcome based education (OBE) for higher education in engineering by accreditation agencies relies on the attainment of graduate attributes. The course of Capstone Project in the final year of B.E. Mechanical Engineering is the project-based course, which is preferred for assessment of the graduate attributes for attainment of Program Outcomes (POs) defined by NBA. The students are required to use the engineering design process to innovate and designing novel products which are based on real-life needs of real customers from society and industry. To prepare the students for the Capstone Project, Cornerstone Projects are introduced in preceding years. One such Cornerstone Project was designed and executed in the fourth semester in the course of Computer Aided Design and Analysis to introduce the students to the use of Modern CAD tools for modeling and analysis and the use of Engineering Standards from BIS. This paper presents the intervention along with the analysis of the direct evaluation of 184 students and survey based indirect evaluation of the project by 53% of the students. The effect of this project-based intervention on the student learning for higher order skills, experiential learning, cooperative learning, collaborative learning, and problem-based learning is also discussed.

RESEARCH PROJECT BASED TEACHING FOR IMPROVING LEARNING OF STUDENTS

Bharat Garg, Amanpreet Kaur and Ajay Kakkar
ECED, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
Email id: bharat.garg@thapar.edu

There are various approaches for in new direction programme to motivate and improve the learning process of the students namely activity-based, assignment/project-based, group discussion based, and think pair and share-based. In this work, the research project-based teaching (RPBT) approach is explored and analyzed as we feel it will be effective to improve the learning process. In order to evaluate the efficacy of the RPBT, we have applied the RPBT approach to the master's program with the student's strength is 29. After the application of intervention, we found an overwhelming response from the students. Their understanding of the subject is deeper than before the intervention. The results show an average 25% improvement in the understanding of combinational and sequential designs in a hardware description language. Further, students were also able to understand the complete flow of a research paper and how to write a research paper. Further, it was also useful in student recruitment as several industries ask about the projects completed in the program. However, it was a little tough for some groups to complete the project and manage the deadlines. Further, students came across many difficulties such as basic concepts of the subject, software, and practical implementation problems. We have given various hints to solve their specific problem and suggested some study materials instead of solving their problems. It helped students to explore the different possible ways for the solution of problems. We found research project-based teaching intervention very satisfactory as the students were more involved in their technical discussion with me and with their group members. We also felt that the student's confidence level was very high after showing the results of their projects which were reflected in the feedback collected after the completion of the project. Since several master's students go for the Ph.D. program after completing their master's degree. This project-based teaching also helps them in their future research work.

THE UNDERGRADUATE CREATIVE WORKSHOP

Mansi Bhargava
LM Thapar School of Management, Patiala, Punjab, India
Email id: Mansi.bhargava@thapar.edu

More colleges and universities are offering these workshops as part of their study programmes. They are different from those provided for students in postgraduate programs and other institutions. An undergraduate creative workshop is defined in this paper, along with some of its benefits and disadvantages. It also provides some further reflections on the undergraduate creative workshop in general. A format used at one institution illustrates how a semester-long workshop was designed and implemented online and offline. There are suggestions of valuable strategies for workshop facilitators, as presented by the practice of one lecturer, in which particular emphasis was placed on how workshops are delivered and how they transition from dialogue to discussion and feedback. In this paper, the author contends that participation in a workshop is a skill students learn during their undergraduate program. That skill is enhanced as students' progress through the program, changing the nature of the workshop along the way. Often used in master's programs, the Creativity Workshop is a motivating, inspirational experience. Students' work is examined, deconstructed, defined, reconstructed, and discussed in detail in depth. Creativity can be developed and explored beyond the classroom through creative writing, memoirs, free-form drawing, photography, storytelling, and mindfulness exercises. It can be helpful to find inspiration in everyday life to overcome blocks and the paralyzing effect of self-criticism. These workshop participants are either settling into a genre they want to work with more generally or are experimenting with something they're not as familiar with. Feedback on their work is very focused. They usually work with people they know or one professional academic expert. There is likely to be a wide variety of different types of creativity within the group.

ENHANCING CONTENT DELIVERY THROUGH VISUAL INTERVENTIONS

Seema Bawa
Department of Computer Science and Engineering, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
Email id: seema@thapar.edu

The widespread use of video lectures has revolutionised the way in which educational content is delivered. With advancements in technology, video lectures have become more accessible and convenient for learners, offering numerous benefits such as increased engagement, flexibility, and accessibility. However, there are several challenges associated with video lectures, such as learner attention span, retention, and engagement It has been observed and reported that adding various intervention and modalities to the learning process improves retention and understanding. As a reflection on how to engage the students more in their learning and how as a teacher we can actively take initiatives in trying to improve the teaching-learning process. To make learning a more enriching experience for the learners, this intervention took place and is being presented here. Adding video lectures in addition to conventional slides-based and/or whiteboard-based lectures adds an extra dimension to the delivery that makes the overall learning more engaging. This intervention as an exercise in technology-augmented learning that can be successful at scale if designed and implemented properly. The proposed visual intervention had been applied on an under-graduate class students. The average score for the Intervention was found to be 10 percentage points higher than the Baseline score (64% vs 54%), even though the content for the Intervention unit was a priori perceived to be more challenging. There was also less variance in the scores for the Intervention compared to the Baseline (standard deviation 11% and 17% respectively) suggesting that the proposed intervention improves performance of all students instead of just the few most diligent ones. This paper aims to identify and analyse the best practices for enhancing content delivery through video lectures to improve learner engagement and retention. The evaluation methodologies clearly illustrate the potential and effectiveness of the methodology.

INTEGRATING PROJECT-BASED LEARNING IN A CONVENTIONAL HIGHER EDUCATION CLASSROOM: AN OUTCOME-BASED EDUCATION APPROACH

Amanpreet Kaur
Electronics and Communication Engineering Department, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
Email id: amanpreet.kaur@thapar.edu

Outcome-based Education (OBE) is an educational theory that is based on the attainment of outcomes/goals by the end of a specific education program. Project-based learning (PBL) that forms an integral part of OBE is an active student-centric form of pedagogy that is characterized by students' autonomy, constructive investigations, goal-setting, collaboration, communication, and reflection in a real-world scenario. This article presents a comprehensive literature review exploring the major components of project-based learning in classrooms, with an intervention carried out for a group of 220 Pre-final year Electronics and Communication Engineering students during their course on Computer Architecture. The intervention basically deals with integrating project-based learning to achieve the main target of outcome-based education. Assessment methods to integrate Project-based learning in higher education and the benefits of the same for implementation of PBL are discussed in this article. The intervention discusses the first two months of the semester teaching for the course on Computer Architecture that was focused on the lower levels of Bloom's taxonomy. This mainly focussed on understanding, learning, and applying the basic concepts of RISC-based computer architectures and their respective instruction sets. The tutorial sessions were designed as per the next two levels of Bloom's taxonomy i.e. analyze and evaluate. Peer-to-peer learning was encouraged in tutorial groups to create an improvised learning environment and divulge students with subject concepts. Since student learning mainly depends upon the type of examinations conducted, the subjective test papers were set to test the evaluation and application skills of the students. In the last two months of the semester, the students were distributed into groups of 4-5 each and then assigned coding projects related to the application of code generation and its application in a real-world scenario. Students came up with numerous different types of codes for a specific problem, illustrating their creativity skills and touching the highest level of Bloom's Taxonomy i.e. Create. This intervention improved students' interest in the subject which was well evident from the performance statistics of the class.

EXPERIENTIAL LEARNING: AN EXPERIMENT WITH NEW IDEAS AND RECEIVE FEEDBACK IN A SAFE ENVIRONMENT

Surbhi Sharma and Rajesh Khanna
Department of Electronics and Communication, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
Email Id: surbhi.sharma@thapar.edu

Outcome-based experiential learning is an approach to education that focuses on the practical application of knowledge and skills, with a particular emphasis on achieving specific learning outcomes. This type of learning is centered around activities that engage learners in hands-on experiences, allowing them to develop a deeper understanding of concepts and ideas by putting them into practice. The outcomes of these activities are predetermined, and learners are assessed based on their ability to achieve these outcomes. This approach is often used in vocational and professional education, as it allows learners to gain valuable practical experience that can be directly applied in their chosen field. Additionally, outcome-based experiential learning can help to foster important skills such as problem-solving, teamwork, and communication, which are highly valued by employers. Overall, outcome-based experiential learning offers a powerful way for learners to develop practical skills and gain a deeper understanding of the concepts and ideas they are studying.

IMPACT OF PROJECT-BASED LEARNING AND THINK PAIR SHARE INTERVENTIONS ON UG STUDENTS OF ENGINEERING

Moon Inder Singh
Electrical and Instrumentation Engineering Department, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
Email id: misingh@thapar.edu

The project-based learning intervention was undertaken among the UG students of the Electronics (Instrumentation and Control) engineering stream. A small but self-directed and self-assessed group participated in learning without a teacher's intervention. The idea was not only to propagate project-based learning but also to inculcate think-pair-share values among the students. The intervention was introduced while teaching a core subject of Microcontrollers and Microprocessors. To make the students think outside of the box, a query regarding the MSP430 processor was posed. Since none had prior knowledge, they were asked to gather information. Some students came prepared, but nine volunteered to work (in a think, pair share (TPS) mode) on this Texas processor and then mentored other groups. The group would frequently meet to discuss what they had learned. After operationalising the processor, the volunteers mentored other groups, transferring what they had learned to other small groups. Thus, it is like an upward-going spring now with the student groups now thinking, sharing and working, i.e. learning without barriers and tutoring each other. A survey was also conducted to study the efficacy of the Think, Pair and Share teaching method. The students strongly agreed that the intervention techniques helped them get involved in teaching and improved the learning process.

A CASE STUDY ON USING EXPERIENTIAL LEARNING AND CREATIVITY TECHNIQUES

Tanvi[1] and H.K. Mehtani[2]
[1]Computer Science Department, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
[2]Mechanical Engineering Department, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email Id: hitesh.kumar@thapar.edu

Through the present case study, we want to highlight the benefit of experiential learning and creativity in classroom exercises. We also evaluate different learning methods through student surveys which provide data on undergraduate students for various class activities. In today's world, classroom engagement of students is more critical and essential than ever. Students' engagement in the classroom allows students to stay focused and more creative in classroom lessons. There are different classroom engagement techniques like Think-Pair-Share, Flip Classroom, etc., but in the present work, we are more focused on experiential learning. According to Bloom's taxonomy also, experiential learning comes on a higher hierarchy. These strategies increase the student's self-efficiency and success rate. This case study shows strong support for the continued usage of experiential exercises; this is also needed to continue the analysis through student surveys for better results of the outcome-based learning approach.

GAMIFICATION OF ANALYTICAL CONTENTS

Seema Bawa
Department of Computer Science and Engineering, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
Email id: seema@thapar.edu

Gamification of contents in class room education is a good intervention for increasing learner & rsquo;s engagement by incorporating game elements into the class contents. This type of learning takes some educational content and transforms it into a game that students can play in between the class. It helps instill in learners some crucial skills such as collaboration, active involvement, critical thinking, and creative problem-solving. Gamification of learning occurs when a series of game elements is arranged into a \"game layer,\" or a subsystem that operates in coordination with learning in traditional classrooms. Gamification proposed in this paper has several benefits including its ability to engage students more effectively than regular class. Gamified e-learning modules promote engagement by creating challenges and tracking learners progress as they learn. It also helps students enhance attention span and retain more of what they learn. It connects learning to the real world and provides instant feedback and reinforcement learning opportunity. Gamification in education can be used as a teaching tool to educate adolescents of all needs. It can be used to teach age-appropriate content through gamification. A few rewards of gamification may be by earning virtual “points” for completing tasks, playing educational games to learn academic skills, competing with peers on a leader board towards a goal and creating competition within the classroom.

Research Integrated Teaching

BRIDGING THE GAP BETWEEN INDUSTRY AND HIGHER EDUCATION THROUGH WORK INTEGRATED LEARNING

Tanu Sharma
Department of Humanities and Social Sciences, Jaypee University of Information Technology, Waknaghat, Solan, Himachal Pradesh, India
Email id: Tanu.sharma@juitsolan.in

The Era embarks the amalgamation of Higher Education and Industry as driving factors towards facilitating Economic growth. Higher Education Institutes boasts about the ample ways in which it has been contributing to economic growth and social well-being through partnerships with private and public sector organizations. Adaptability and creativity are among the five top skills in demand in 2021. With workplaces and jobs going through massive make over ,skill sets need to be ramped up quickly to meet the global demands. India Skills Report 2021 found that only 45.9% of Indian graduates were found employable. Though Higher Education has played a keen role in sharpening the skills of workforce and also stimulating them to think out of the box. But still large gaps remains in what the industry actually needs in terms of skillful workforce. With rapidly changing industry demands and funding models, the relationship between universities and industry has to be remodeled. Institutions and Industry are working hard to meet these new skill sets and necessitating themselves in appraising the facets that influence students' professional goals. One way to achieve this is trough Work integrated learning (WIL). Work Integrated Learning (WIL) are programs that connect university students to a workplace related to their field of study. It endeavors to coalesce academic learning's of study with the practice of work through a specific program. It can be aggressively used in enhancing employability in students and producing workplace-ready graduates. Through this paper the author aims to understand how academia and industry can build mutually beneficial links and thus facilitate a healthy creative and resilient workforce.

INVESTIGATING THE IMPACT OF DIFFERENT DRIVERS (PEDAGOGIES) OF STUDENT CENTRED LEARNING IN INDIAN HIGHER EDUCATIONAL INSTITUTIONS

Rakesh Kumar Sharma and Sheena Chhabra
School of Humanities and Social Sciences, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: rakesh.kumar@thapar.edu

With change in time, there has been a paradigm shift in the teaching pedagogy. The roles and responsibilities of both teachers and students have changed. Student centred learning is competency-based, real world relevant and can occur anytime and anywhere. Entwistle et al. (2000) opine that SCL approach enhances students' learning via their involvement in the large class. The paper aims to investigate the key drivers of student centred learning that enhance their learning during classroom interaction. The objective of implementation of this pedagogy is to enhance learning and involve the entire class including those students who are less serious in studies. Moreover, the intention is to improve teaching skills of instructor through students' feedback. The intervention is performed on final year students for the course Engineering Economics. The two statistical techniques (ANOVA and multiple regression) have been used for to analysis. The results of ANOVA technique reflect that the various pedagogies are significant drivers of SCL approach. Also, conducting group discussion and presentation and bifurcating large class in smaller groups lead to enhance students' learning and academic performance. The various pedagogies of SCL enhance students' learning and academic performance.

STRATEGIC LINKING BETWEEN RESEARCH AND TEACHING: A BACKBONE OF ACTIVE LEARNING ENVIRONMENT

Parag Nijhawan[1] and Parminder Singh[2]
[1]Electrical and Instrumentation Engineering Department, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
[2]Chemical Engineering Department, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
Email id: parag@thapar.edu

Research-led teaching incorporates and benefits from the teacher\'s disciplinary research to improve student learning and outcomes. From the perspective of the learner, the research-led teaching leads to a better understanding of the knowledge bases of disciplines and professions, including research methods and challenges; development of intellectual abilities, enhancement of employment skills, and zeal for lifelong learning; experience with independent research and investigation; and increased participation in their studies and application in the real world. From the institute point of view, this would definitely enhance its brand value. This intervention was applied in a first year PG course. It was felt from the discussions with the previous batch of students that they were not comfortable in the one of the topics' as very limited content was available in the text books and research papers. For this, a suitable course module needed to be designed to help the students understand about the need and benefit(s) of this problem. So, international standards were consulted. To ensure proper learning, the number of problems has been solved in the class. In addition to this, students have prepared and submitted the assignments in groups of 2-3. The course instructor feedback and course content surveys that were carried out clearly indicate that the students were pretty happy and satisfied with the contents, and the manner in which the whole of the topic was covered in the class. The comfort level of the students in this topic when measured through direct evaluation was also very encouraging. It can be safely concluded that to ensure active learning environment through research led teaching that learners' curiosity must be piqued in order for them to be more attentive and serious about the course that not only boosts their self-esteem but also motivation to succeed in life.

INTERVENTION OF TECHNOLOGY-ENHANCED TEACHING PEDAGOGY

Santosh Sonar and Ravinder Aggarwal
Electrical and Instrumentation Engineering Department, TIET, Patiala, Punjab, India
Email id: santosh.sonar@thapar.edu

Educational software and multimedia platforms are becoming increasingly common in the Higher Education (HE) System for improving instructors' and students' learning experiences. New Education Policy (NEP), technology advancements have helped to shift the focus of teacher design work from a faculty-centred to a student-centred outcome-based education system through the CAPSL program. Efforts have been made at the institute to improve classrooms and laboratories by utilising interactive technology. This assignment examines the importance of teaching interventions, how they are implemented, and how they are evaluated to improve students' learning experiences. For this study, the intended audience is third-year Biotechnology students, and the subject is "Concepts in Biomedical Instrumentation (UBT532)". To evaluate the interventions, a set of descriptive and score-based questions has been prepared. Further, the new concept of think pair share activity was introduced in the class to see the creativity of the students. At the end of the course, the feedback from students is analysed using a graphical approach.

INTEGRATING TEACHING AND RESEARCH TO ENSURE THE PROGRESSION PATH OF STUDENTS FROM RESEARCH LED TO RESEARCH TUTORED APPROACH

Parag Nijhawan
Electrical and Instrumentation Engineering Department, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
Email id: parag@thapar.edu

In most of the universities or institutes of the world, teaching and research are being carried out in isolated zones without any integration. This restricts the exponential growth of technical know-how not only of the students but also of the teachers, and defeats the total purpose of our education system which aims at providing active learning environment to the students. So, the concept of integrating research and teaching is very important in the sense that it will open up a new horizon of possibilities not only for the students but also for their teachers, their institutes, and society as a whole. This intervention was implemented in a first year PG course entitled 'Power System Transients and Mitigation'. The students were informed about my research during the lecture classes, and were exposed to the design problems during the tutorial classes. The class had 15 students out of which 5 students took their dissertation topic on the above said subjects. During the progression of the courses, 'Course Instructor feedback', 'Student Feedback', SRS conducted at the institute level, the post MST results analysis and the post EST results analysis were collected/carried out. From the results so obtained, it was suggestive that students really enjoyed their learning experience in the above said subjects. But it was felt that students need to be partnered in the whole teaching learning process. So, their further progression during their stay in the institute was monitored. Out of these 15 students, 5 students opted to work for their M.E. dissertation work in the same field under different supervisors. One student (Mr. Sourav) was also working under my supervision who published two research papers in SCIE journal (Indian Journal of Geo-Marine Sciences), and secured 'A' grade in his M.E. dissertation. Out of these five students, two students secured 'A' grade, two students secured 'A-grade and one student secured 'C' grade in their M.E. dissertation work. One of the other students (Mr. Sahil Mehta) got his one paper published in a peer-reviewed journal, and also got admission for the Ph.D. programme in Thapar Institute of Engineering and Technology. In light of all these developments, I can safely conclude that I was pretty successful upto some extent in implementing 'Research Integrated Teaching' model in my PG class.

IMPLEMENTATION OF RESEARCH-INTEGRATED TEACHING TO FOSTER FORMATIVE THINKING AND CREATIVITY AMONG STUDENTS

Rajnish Mallick
638, CSE building, Mechanical Engineering Department, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
Email id: rajnish.mallick@thapar.edu

The aim of this intervention is to engage undergraduate students with research and inquiry by implementing research-integrated teaching practices. The aim is to develop and strengthen formative thinking and creativity among students. A preliminary investigation has been conducted to understand students' backgrounds, areas of interest, career-related apprehensions and future aspirations. An interactive session is organized with third-year (05th semester) Mechanical Engineering students in the Lean and Agile Manufacturing course, UPE 503. The duration of the intervention was around 02-03 weeks. Students are introduced to the industrial research domains and respective sub-topics. Eight research topics relevant to the curriculum in the Industry 4.0 section are allocated to the students in a group of three. It is observed that research-integrated teaching could serve as an intervention that can alleviate students' engineering queries and make them industry ready. The course curriculum perfectly blends conventional Toyota Production System (TPS) and state-of-the-art Industry 4.0 practices (including AI & ML, Industry Internet of Things (IIoT), Smart factories, Digital Twins, AR (Augmented Reality) and V-(Virtual Reality) in the mechanical sciences industry). Moreover, the intervention introduced integrated research teaching to inculcate students formative thinking and creativity. It was a win-win for students and myself, as I came from an industry leadership role and it was a unique opportunity to train the students to become next generation leaders.

USE OF FLIPPED CLASSROOM FOR RESEARCH LED TEACHING TO UNDERGRADUATE ENGINEERING STUDENTS FOR ENHANCED LEARNING AND PRACTICAL APPLICATION

RS Kaler and Gagandeep Kaur
Department of Electrical & Instrumentation Engineering, Thapar Institute of Engineering & Technology, Patiala, Punjab, India
Email id: rskaler@thapar.edu

The intervention presented in this paper was introduced in the final year undergraduate programme in engineering. The course of soft computing taught to students of Electronics & Communication Engineering and students of Electronics & Computers Engineering programme.

The total number of students enrolled is 47. Active learning activities, such as those in flipped classrooms, increase student accountability for class preparation and attendance. Implementing flipped classroom strategies can increase student perceptions that pre-class activities are important and enhance in-class learning. I observed increased student learning, interest and interaction was by implementing flipped classroom. While the research is undecided on the students perceptions on the efficacy of flipped classroom approaches. Following are the results of the feedback from the students taken regarding the intervention. Out of 47, 45 students rated the intervention as a success in terms of understanding. 43 students felt that it increased their knowledge further regarding scholarly research. 46 students accepted that it increased their interaction. 43 Students felt actively engaged. As the literature also suggests, flipped classroom approach goes a long way in students becoming active learners rather than passive ones.

AN EFFECTIVE APPROACH TO GROUP BASED LEARNING FOR STUDENTS IN A LARGE GROUP

Vikas K Sangal
Department of Chemical Engineering, Malaviya National Institute of Technology, Jaipur, Rajasthan, India
Email id: vksangal.chem@mnit.ac.in

Teaching effectively for large class with more theoretical contents is challenge in higher education. An effective approach to group based learning for students in a large group has been adopted in a course entitled 'Industrial Pollution Abatement (IPA)'. This is part of the Chemical Engineering Programme. I observed that in some content of IPA (topic: Air pollution control equipment devices) learning is teacher centric and students gets bored. A group presentations for air pollution control devices was introduced, so that students take interest in learning and could improve their communication, interpersonal skills and team-working skills. Group based activities are ways to effectively provide students with a more active approach to learning. Five groups of 15 students were made from student data sheet and assigned different topics to each group. Ask them to collect the literature and reading materials, videos etc for the specific topics. Shared and discussed the topic within group members and make a power point presentation for the same and present in class rooms as a team. All the groups presented their topics in classroom. It was evaluated in terms of technical contents, group coordination, taking initiative/leadership, communication and interpersonal skills and also time management. A survey was conducted to ascertain the responses of the students towards this mode of teaching and learning after the presentation of all groups was over. The survey contains the following points as that whether this mode of learning is helpful for improving the self-learning, communication skills and interpersonal skills/team work. The survey form also includes the difficulties facing during this mode of learning. Results of the survey showed that in group-based learning, students learned by cooperating and interacting with each other and participated actively in their own learning process. Students also learned to promote teamwork, communication, interpersonal skills and to manage in group with time limits. The concept prompted to consider self-learning and interpersonal skills, which could eventually be improved by means of group work.

OPPORTUNITIES AND ISSUES OF OUTCOME-BASED EDUCATION IMPLEMENTATION IN POLYTECHNIC COLLEGES OF PUNJAB

Shubhashree Chakraborty[1] and Subhas Chandra Bose[2]
[1]EIED, Thapar Polytechnic College, Patiala, Punjab, India
[2]SHSS, Thapar Institute of Engineering and Technology, Patiala, Punjab, India

Technical colleges were established in India to upgrade technical and vocational training and thereby enhancing the quality and quantity of skilled labour force. The traditional education methods are seen as less effective than what students can do after undergoing the learning process. Outcome-based education, a performance based approach, determine the curriculum content and its organization, the teaching methods and strategies, the courses offered, the assessment process, the educational environment and the curriculum time table. Outcome Based Education has been found to be an excellent approach to improve and maintain high quality education in these institutions. This arrangement has transformed the conventional education system into a new and more student-centered approach. This approach helps in developing more directed & coherent curriculum, continuous quality improvement and more industry ready workforce. Although Outcome Based Education has many benefits, it is quite challenging for educators to follow this new approach of teaching. The current study is empirical in nature and tries to identify the opportunities and issues associated with this approach exclusively from teacher's point of view. Majority of the respondents have identified managing the records of students, defining the course outcome and designing the curriculum as major issues. The outcome can assist the teachers in avoiding them and thereby assisting them in enhancing their teaching ability.

ASSESSMENT OF THE EFFECTIVENESS OF TEACHING IN LARGE GROUPS USING THE STRATEGY OF THINK-PAIR-SHARE

Diksha Sharma and Amit Dhir
School of Humanities and Social Sciences, Department of Environment and Energy, Thapar Institute of Engineering and Technology, Patiala, Punjab, India
Email id: diksha.sharma@thapar.edu

Student-centric teaching or approach also known as learner-centered approach, clearly emphasizes the needs, skills, and interests of the learner. The focus is on the learner and authentic problems rather than on the structured analysis of the curriculum content. However, assessment continues to be vital to the education system. The present paper analyses ways of assessing the effectiveness of teaching in large classrooms. with the help of interventions that enabled the shy and not so active students participate and involve themselves in the classrooms. A general lack of interest and involvement among students defeats the entire purpose of teaching, and to counter the same the intervention of the Think Pair- Share technique was adopted while teaching a large group of first year students. It is further discussed how the intervention and the criterion-based assessment emerged both as a formative and a summative assessment, highlighting the redundancy of the age-old norms and criteria of assessment.

LIBERAL ARTS EDUCATION AS OUTCOME BASED EDUCATION

Shveta Dhaliwal
School of Liberal Arts, Thapar Institute of Engineering and Technology,
Patiala, Punjab, India; Masaryk University, Czech Republic, Laurentian University, Canada
Email id: shveta.dhaliwal@thapar.edu

Student-centric teaching or approach also known as learner-centered approach, clearly emphasizes the needs, skills, and interests of the learner. The focus is on the learner and authentic problems rather than on the structured analysis of the curriculum content. However, assessment continues to be vital to the education system. The present paper analyses ways of assessing the effectiveness of teaching in large classrooms. with the help of interventions that enabled the shy and not so active students participate and involve themselves in the classrooms. A general lack of interest and involvement among students defeats the entire purpose of teaching, and to counter the same the intervention of the Think Pair- Share technique was adopted while teaching a large group of first year students. It is further discussed how the intervention and the criterion-based assessment emerged both as a formative and a summative assessment, highlighting the redundancy of the age-old norms and criteria of assessment.












Thapar Institute of Engineering & Technology

Patiala, Punjab, India

OUTCOME BASED EDUCATION
OBE2023