

QUANTUM UNIVERSITY



Student Centric Methods



**Annual Report on Problem
Solving Methodologies**
Academic Year (2020–2021)

ANNUAL REPORT
PROBLEM SOLVING LEARNING METHODOLOGIES



Academic Year (2020-2021)



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Quantum University

Problem Based Learning Methodologies

2020-2021

Problem-Based Learning (PBL) is an innovative educational approach that redefines the traditional classroom dynamic by placing students at the forefront of their learning experience. In this methodology, students actively engage in the learning process by tackling real-world, open-ended problems within collaborative group settings.

The essence of PBL lies in its emphasis on cultivating essential problem-solving skills. Instead of relying on traditional lecture-based instruction, PBL encourages students to delve into authentic challenges that mirror those they might encounter in their future careers. This hands-on approach not only deepens their understanding of the subject matter but also equips them with critical thinking, communication, and teamwork skills.

Central to PBL is the concept of student empowerment. By immersing themselves in collaborative group work, students take ownership of their learning journey. This not only enhances their motivation and self-directed learning skills but also fosters a sense of responsibility and independence. In this active learning environment, students become more than passive recipients of information; they become problem-solvers, applying theoretical knowledge to real-world scenarios.

Problem Solving Methods



- Technical Quiz
- Project Work and Demonstration
- Project Competition
- Research Paper Presentation/RIC Presentation
- Case Studies
- Hackathon-Problem Selection and Solving


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	2	Department of Pharmacy	National Pharmacy Week 19, 20 & 21 November, 2020-Quiz Competition	Online	Quantum University	19/11/2020 to 21/11/2020	91
	3	Department of Computer Science & Engineering	Workshop on Problem Solving with Python Coding	Mini Auditorium/ Mr. Rahul Panwar	IIT Mandi, Insergo Technologies , Dehradun	11/01/2021	81
	4	Theatre Club	One Act Play "Parinaam" Themed on Decision Making	Shyam Ji Auditorium	Quantum University	20/02/2021	300
	5	Department of Computer Science & Engineering	International Conference on "Fourth Industrial Revolution based Technology and Practices (ICFIRTP-2021)	Online/ Prof. E. G. Rajan(EthirajanGovindaRajan), Prof. Valentina Emilia Balas, and Prof. Ing. Francesco Benedetto	Pentagram Research Centre Pvt. Ltd	26/03/2021 & 27/03/2021	57

	6	Department of Mechanical Engineering	Guest Lecture on "Connection of Three Phase Transformers"	Online/ Er. Rajiv Kumar	Quantum University	04/12/2021	101
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Problem Solving Learning Session- 2020-2021

1. Workshop on Problem Solving with React Native Technology (Online)

On November 11, 2020, the Department of Computer Science and Engineering organized a workshop focusing on Problem Solving through React Native technology. The workshop, conducted in online mode, aimed to familiarize students with React Native, a popular framework for building cross-platform mobile applications. The workshop was conducted by Mr. Himanshu Tyagi and Mr. Akansh Sirohi from Quantum University, with support from the CodeX club.

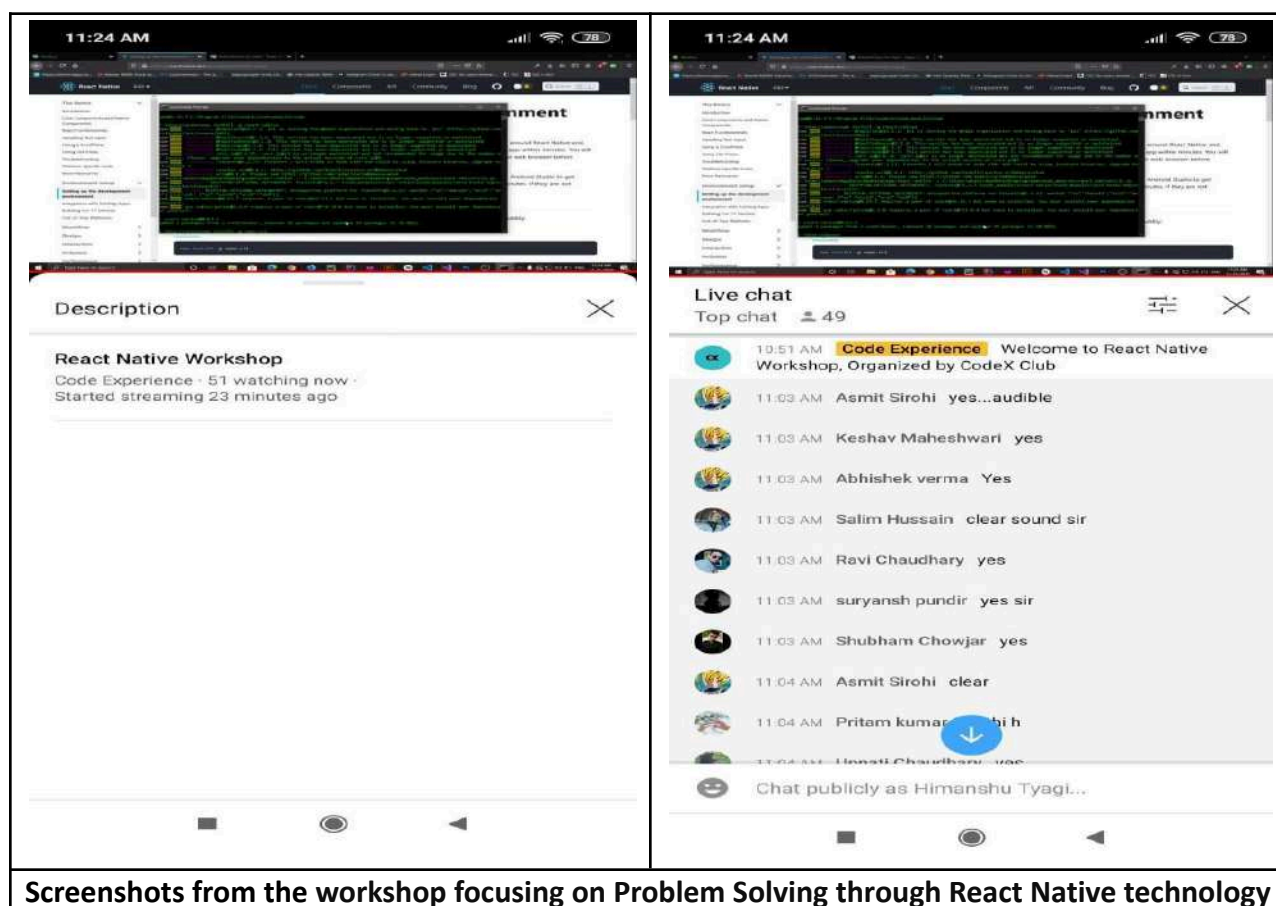
Workshop Details: The workshop commenced with an introduction to React Native, providing students with an overview of its features, advantages, disadvantages, and potential applications in the IT industry. The session progressed with a detailed discussion of React Native libraries and practical demonstrations on how to utilize React Native in Android app development.

Key Highlights:

1. **Introduction to React Native:** The workshop began with an introduction to React Native, highlighting its significance in mobile app development and its role in facilitating cross-platform development.
2. **Discussion on React Native:** Mr. Himanshu Tyagi and Mr. Akansh Sirohi elaborated on the advantages, disadvantages, and potential uses of React Native, providing students with insights into its capabilities and limitations.
3. **Practical Demonstrations:** The workshop included practical demonstrations on how to use React Native, with a focus on Android app development. Students were guided through the process of setting up React Native projects and implementing basic functionalities.
4. **Interactive Session:** The workshop encouraged active participation from students, who expressed their interest through queries and discussions. Mr. Tyagi and Mr. Sirohi addressed students' questions and provided solutions to their queries, enhancing their understanding of React Native concepts.
5. **Project Showcase:** Towards the end of the workshop, the facilitators showcased projects developed using React Native and provided students with GitHub links for further exploration.

and practice. This practical demonstration served as inspiration for students and motivated them to apply their learning to real-world projects.

The workshop on Problem Solving through React Native Technology organized by the Department of Computer Science and Engineering provided 51 students with valuable insights and practical knowledge in React Native development. The comprehensive coverage of React Native concepts, coupled with hands-on demonstrations and interactive discussions, facilitated a conducive learning environment for students.



Screenshots from the workshop focusing on Problem Solving through React Native technology

2. National Pharmacy Week 19, 20 & 21 November 2020- Quiz Competition

The Department of Pharmacy at Quantum University celebrated National Pharmacy Week from November 19 to 21, 2020, with a series of events aimed at enhancing academic and practical knowledge among students. Hon'ble Vice-Chancellor and Director Dr. Gulshan Chauhan, along with Head of the Pharmacy Department Dr. Praveen Kumar, inaugurated the event. One of the highlights of the celebration was a guest lecture by Dr. Yogesh Bahuguna on the topic "Future Prospect in Pharma Education."

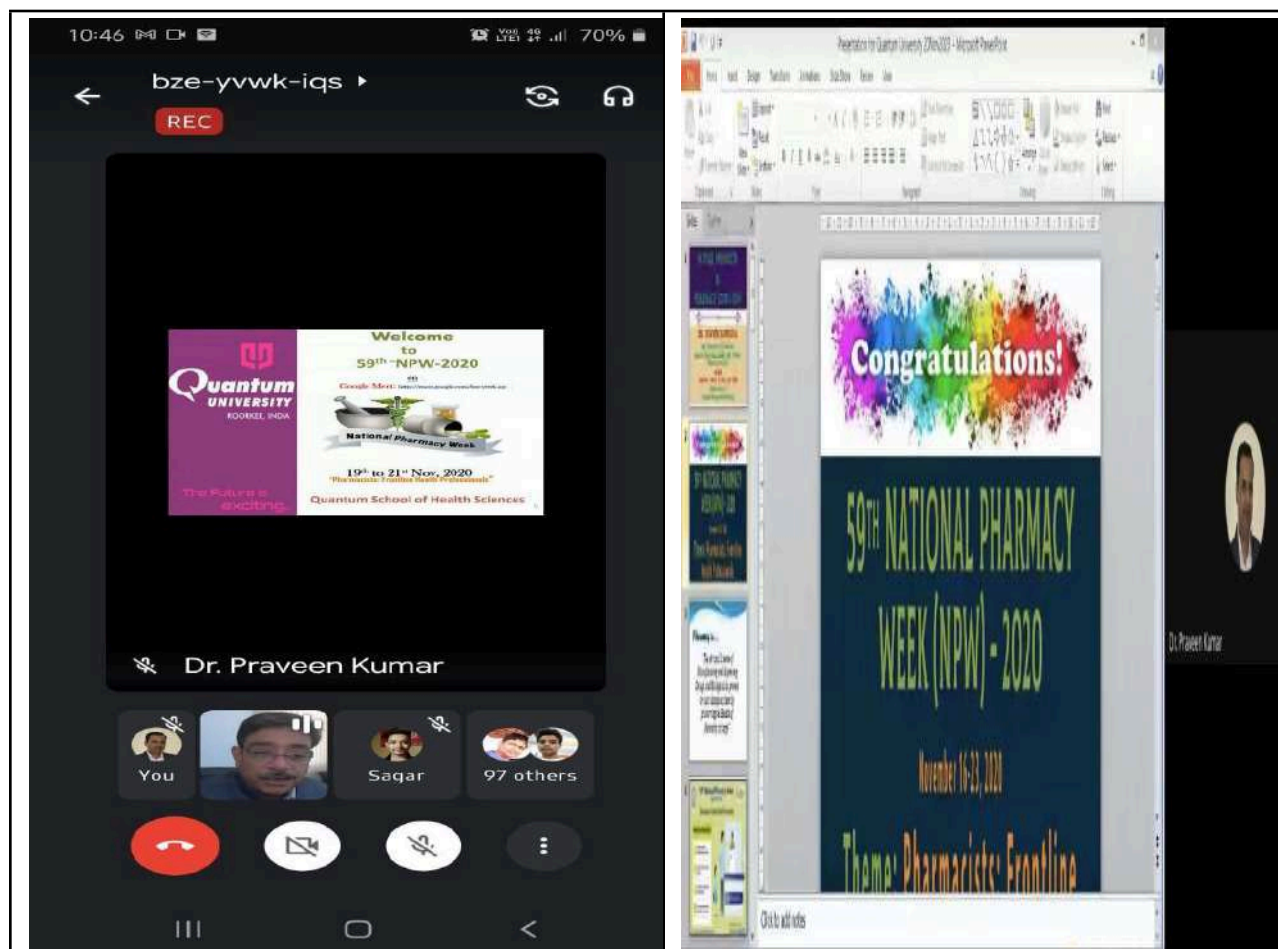
The National Pharmacy Week celebration comprised various activities designed to engage and educate students. The guest lecture by Dr. Yogesh Bahuguna provided insights into the prospects in pharmaceutical education, offering valuable information to students about career opportunities and advancements in the field. The event aimed to provide an enhancement in academic and practical knowledge, fostering a deeper understanding of the pharmaceutical industry among students.

The event witnessed active participation from more than 91 students from the Pharmacy department. Students showed enthusiasm and interest during the online session, actively interacting with the speaker and engaging in discussions. The guest lecture provided a platform for students to broaden their understanding of the pharmaceutical landscape and explore potential career paths in the field.

Quiz Competition: As part of the celebration, a quiz competition was organized on November 22, 2020. The competition aimed to assess and promote problem-solving skills among pharmacy students. The winners of the quiz competition were:

- 1st Prize: Raj Vashistha (B.Pharm III Sem)
- 2nd Prize: Deepak Kumar (D.Pharm 2nd Year)
- 3rd Prize: Vicky Kumar (B.Pharm III Sem)

The National Pharmacy Week celebration at [University/Institution Name] was a resounding success, providing students with valuable insights and opportunities for academic and professional growth. The event served its purpose of enhancing knowledge and fostering a spirit of enthusiasm and engagement among students. Moving forward, it is essential to continue organizing such events to promote excellence and innovation in the field of pharmacy education.



Screenshots from the National Pharmacy Week Nov 19, 20 & 21 2020

3. Workshop on Problem Solving with Python Coding

On January 11, 2021, the Department of Computer Science and Engineering organized a workshop on Problem Solving with Python Coding. The workshop aimed to equip students with the essential skills required for problem-solving using Python, a popular and versatile programming language known for its readability and flexibility.

The workshop was attended by 81 students eager to enhance their programming skills and learn the fundamentals of problem-solving using Python. Mr. Rahul Panwar, from IIT Mandi and Insergo Technologies, Dehradun, was invited as the trainer for the workshop. Mr. Panwar's expertise in Python programming and experience in academia and industry made him the ideal candidate to lead the workshop.

Python is an interpreted, high-level, and general-purpose programming language that has gained widespread popularity in recent years. Its design philosophy emphasizes code readability and simplicity, making it an ideal choice for both beginners and experienced programmers. Python's versatility allows it to be used for a wide range of applications, from web development and data analysis to artificial intelligence and scientific computing.

Python's language constructs and object-oriented approach enable programmers to write clear, concise, and maintainable code for projects of varying scales. Additionally, Python supports multiple programming paradigms, including structured, object-oriented, and functional programming, providing developers with flexibility in their coding approach.

Key Workshop Discussions: During the workshop, Mr. Rahul Panwar covered various aspects of Python programming, focusing on problem-solving techniques and best practices. The discussions included:

- Introduction to Python programming language and its features.
- Understanding the significance of whitespace and readability in Python code.
- Exploring Python's support for multiple programming paradigms.
- Overview of Python interpreters and its compatibility with mainstream operating systems.
- Introduction to CPython, a free and open-source implementation of Python, supported by a global community of programmers.

The workshop provided an interactive learning experience for the students, with hands-on coding exercises and demonstrations conducted by Mr. Rahul Panwar. Students actively participated in problem-solving activities, gaining practical insights into Python coding.

techniques and methodologies. The interactive nature of the workshop facilitated a collaborative learning environment, where students could ask questions, seek clarification, and engage in discussions with the trainer and their peers.

The workshop on Problem Solving with Python Coding organized by the Faculty of Technology and Computer Science Engineering was a resounding success, providing students with valuable knowledge and practical skills in Python programming. The comprehensive coverage of Python's features, along with hands-on coding exercises, enabled students to gain a deeper understanding of problem-solving techniques using Python.



Glimpse from the workshop on Problem Solving with Python Coding

4. One Act Play “Parinaam” Themed on Decision Making

On February 20, 2021, the Theatre Club of Quantum University organized a one-act play titled "Parinaam" with the theme of "Decision Making." The play, performed exclusively by 22 students of Quantum University, aimed to engage the audience emotionally while providing valuable insights into the process of decision-making.

The primary objective of the play was to instill in students the importance of problem-solving and decision-making abilities, which are crucial skills needed in real-life situations. By showcasing various scenarios and outcomes in the play, the organizers sought to enlighten the audience about the complexities involved in decision-making and the impact of choices on one's life.

"Parinaam" revolves around the theme of decision-making, exploring the consequences of various choices made by the characters. Through a series of interconnected scenes, the play delves into the dilemmas faced by individuals in different aspects of life, such as relationships, career, and personal growth. Each character grapples with tough decisions, highlighting the uncertainty and challenges inherent in the decision-making process.

The one-act play "Parinaam" was well-received by the audience comprising 300 students and faculty members. The captivating performances and thought-provoking narrative resonated with the audience, evoking a range of emotions and sparking introspection. Many viewers appreciated the realistic portrayal of decision-making dilemmas and found the play relatable to their own experiences.

The play successfully achieved its objective of stimulating critical thinking and fostering problem-solving skills among the audience. By witnessing the characters' struggles and their subsequent consequences of their decisions, the viewers gained valuable insights into the importance of careful deliberation and consideration in decision-making processes. The play served as a catalyst for introspection and self-reflection, prompting audience members to reevaluate their own approach to decision-making in their lives.

The one-act play "Parinaam," organized by the Theatre Club of Quantum University, provided an enriching and insightful experience for both participants and audience members. Through its exploration of decision-making themes, the play not only entertained but also educated and inspired individuals to develop their problem-solving abilities. The success of the play underscores the importance of creative mediums such as theater in promoting personal growth and self-awareness.



Few clicks from the One Act Play “Parinaam’ themed on decision making

5. International Conference on "Fourth Industrial Revolution based Technology and Practices (ICFIRTP- 2021)"

Quantum University organized a two-day online international conference titled "**Fourth Industrial Revolution based Technology and Practices (ICFIRTP-2021)**" to provide the best industrial knowledge to its students and help them excel in industrial problem-solving. The conference, held on 26th & 27th March 2021, attracted significant attention, with 57 students participating.

ICFIRTP-2021 was jointly organized by the Department of Computer Science & Engineering and Uttarakhand Technical University, Dehradun. It was held under the aegis of TEQIP III and sponsored by notable entities such as the Science and Engineering Research Board (SERB), Department of Science and Technology, Government of India, and Uttarakhand State Council for Science and Technology, Dehradun, Uttarakhand (UCOST). The event also received support from the IEEE UP Section, India, and was held in association with Dr. Babasaheb Ambedkar Technological University.

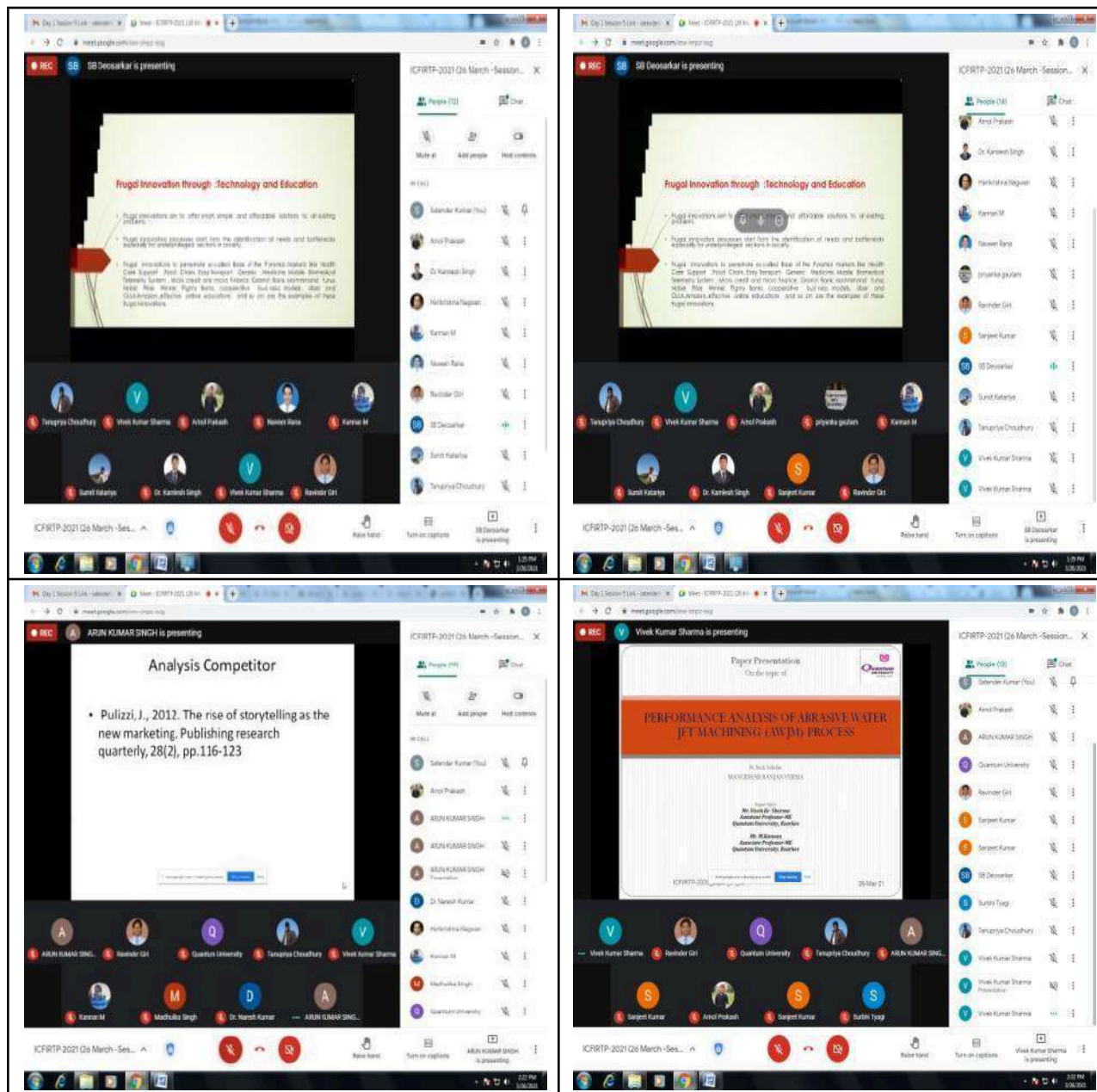
The conference featured distinguished keynote speakers including Prof. E. G. Rajan (EthirajanGovindaRajan), Prof. Valentina Emilia Balas, and Prof. Ing. Francesco Benedetto. Their wealth of knowledge and expertise appealed to a wide audience, enriching the conference experience for all participants.

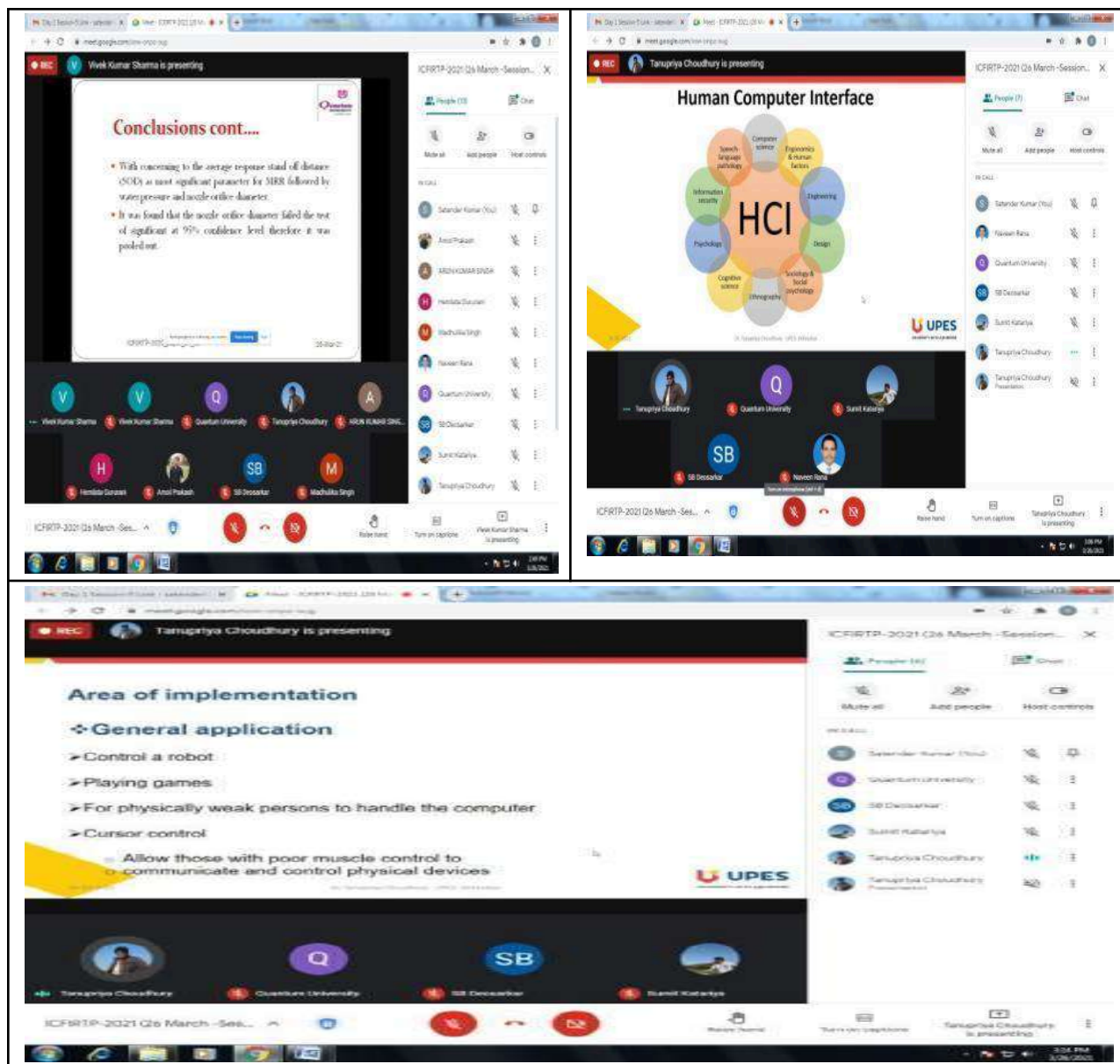
ICFIRTP-2021 aimed to provide a platform for researchers from academia and industry to share their latest research contributions and exchange knowledge with the common goal of shaping the future. The conference program encompassed various sessions, including distinguished lectures, paper presentations, poster sessions, and project demonstrations. Additionally, industrial workshops were conducted to provide practical insights into the digital transformation of industries, emphasizing the concept of Industry 4.0.

The overarching theme of the conference was the digital transformation of industries, focusing on the adoption of new technologies for progressive automation in the production process. Discussions revolved around innovative technologies and their application in various industrial sectors, highlighting the continuous evolution and development in this domain.

The International Conference on Fourth Industrial Revolution-based Technology and Practices (ICFIRTP-2021) served as a valuable platform for fostering collaboration and knowledge exchange among researchers and industry professionals. The event successfully achieved its goal of providing insights into Industry 4.0 and facilitating discussions on cutting-edge

technologies shaping the future of industries. Quantum University's commitment to providing quality education and promoting industrial innovation was evident through the organization of this conference.





Screenshots from the "Fourth Industrial Revolution based Technology and Practices (ICFIRTP-2021)"

6. Guest Lecture on “Connection of Three Phase Transformers”

On December 04, 2021, the Department of Mechanical Engineering organized a guest lecture on the topic "Connection of Three Phase Transformers." The lecture was conducted via web-based online mode and aimed to enhance students' proficiency in industrial problem-solving related to three-phase transformers engaging 101 students.

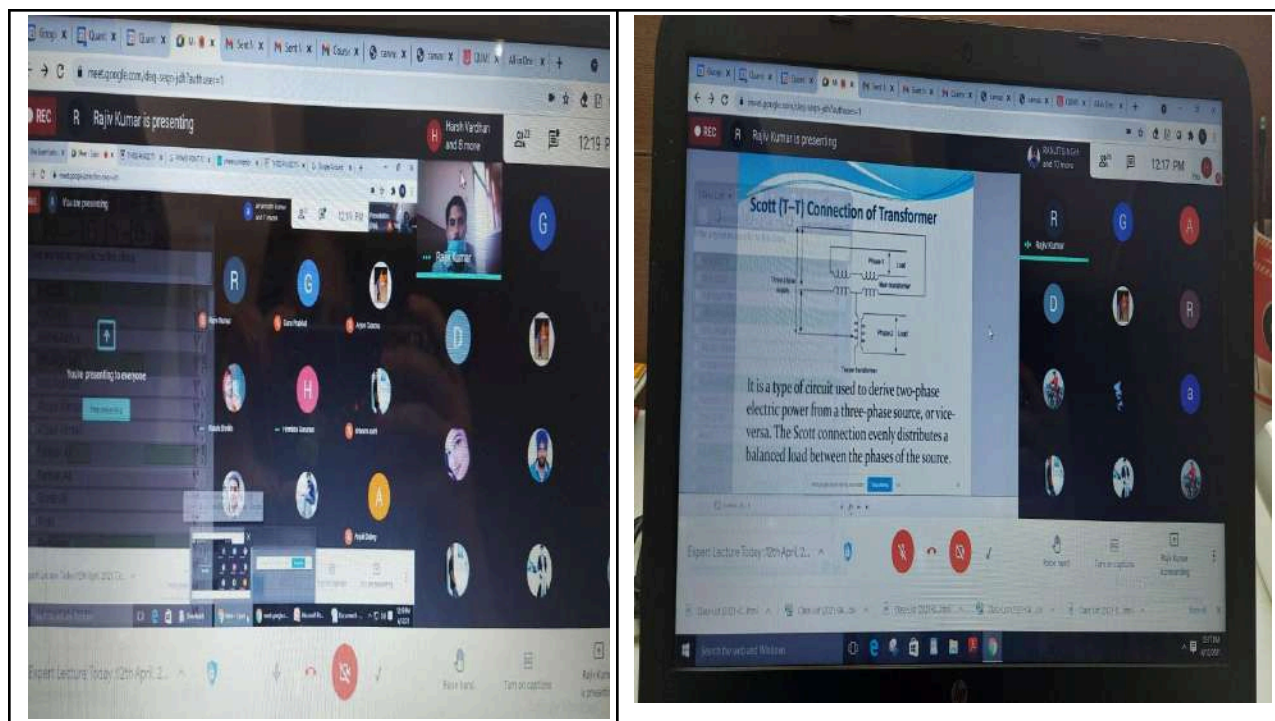
The primary objective of the guest lecture was to equip students with the necessary skills and knowledge to effectively deal with the industrial problems of three-phase transformers. Through comprehensive explanations and interactive sessions, students were expected to gain a deeper understanding of electrical connections used in various electrical engineering projects.

The guest lecture was delivered by Er. Rajiv Kumar elucidated the fundamentals of electrical connections of electrical appliances such as ceiling fans, extension boards, staircase lighting, and tube lights. He emphasized various types of connections utilized for three-phase transformers, both in general domestic settings and industrial applications. Moreover, Er. Rajiv Kumar provided insights into the electrical power transmission and distribution processes in India.

Key Highlights:

- The lecture was filled with comprehensive details regarding electrical connections commonly used in engineering projects, enriching students' understanding of practical applications.
- Er. Rajiv Kumar ensured the session was highly interactive, encouraging students to actively engage in discussions and ask questions.
- Emphasis was placed on the importance of conducting experiments in the laboratory to supplement theoretical knowledge and deepen comprehension of the working principles behind electrical appliances.

The guest lecture on "Connection of Three Phase Transformers" proved to be highly informative and beneficial for the students of Mechanical Engineering. Er. Rajiv Kumar's expertise and engaging presentation style facilitated a conducive learning environment, enabling students to grasp complex concepts related to electrical connections and transformer technology. The interactive nature of the session encouraged active participation and fostered a spirit of inquiry among the students.



Screenshots from the Guest Lecture on "Connection of Three Phase Transformers"