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Tomorrow's Engineers Workshop

Considering the fact that societal problems are one of the major concerns for future Engineers, the 'Tomorrow's Engineers Club' of MVJCE conducted a 2-day Workshop from 25.03.2026 to 26-03-2026. The main objective of this Workshop was to provide a platform for students from all the disciplines to work together, utilize the skill sets of each discipline, think out-of-the-box, and present solution ideas to various open-ended societal problems that we face, every day. 61 Students participated in this workshop from various department. The students were divided into six interdisciplinary groups, each group given a societal problem and presented an innovative solution for that problem.

Day 1 (25.03.2026)

Session-1: Ideation

The workshop was graced by **the Honorable Chief Guest Dr. B N Suresh, Chancellor and Founder Director, IIST, Thiruvananthapuram and Chairman of the Board of Governors, MVJCE, Bangalore and the esteemed Resource Speaker Dr. K Sudhakar, Professor (Retd.), Department of Aerospace Engineering, IIT Bombay, on 25th March 2026, at 2:00pm, in Smt. Rajalakshmi Jayaraman Seminar Hall, MVJCE.**

Dr. K. Sudhakar addressed the participants with an inspiring vision for the future of engineering. He emphasized that the primary goal of the workshop was to provide a platform for budding engineers to showcase their innovative ideas and creativity. He encouraged students to actively use their skills to address and solve real-life challenges faced by society.

To engage the participants, Dr. K. Sudhakar initiated an interactive session by posing a few fundamental questions:

- What is an engineer?
- How do you define engineers?
- How do you explain to others that you are an engineer?

Dr. K. Sudhakar delivering his lecture on “Ideation”

This discussion prompted students to reflect on their identity and role as future engineers. He clarified that engineers are not merely individuals who build machines or structures, but creative thinkers and problem-solvers who strive to improve the world around them.

Further deepening the session, Dr. K. Sudhakar introduced another important question:
“How do engineers solve problems?”

He explained that engineers follow a structured and logical approach to problem-solving, which includes:

- Identifying and understanding the problem
- Conducting research and gathering relevant information
- Brainstorming multiple possible solutions
- Designing and developing the most effective solution
- Testing and refining the solution
- Implementing it in real-world scenarios

Students Attentively Listening to the Lecture

In addition to this process, Dr. Sudhakar highlighted two essential mindsets that every engineer must develop:

1. Empathy

Before creating any solution, engineers must practice empathy. This involves putting themselves in another person's position to truly understand their experiences, challenges, and needs. He emphasized that without genuinely caring about the user's problem, it is impossible to design an effective and meaningful solution.

2. Functional Thinking

Dr. Sudhakar explained that functional thinking focuses on the purpose of a design rather than just its appearance. Engineers must ask, "What is the primary function this solution must serve?" By prioritizing functionality, engineers ensure that their innovations are practical, efficient, and genuinely beneficial to users.

Day 1 (25.03.2026)

Session-2: Team Formation & Problem Identification

The second session focused on collaborative learning. A total of 61 students participated in this session.

Dr. Sudhakar facilitated the formation of six interdisciplinary teams, ensuring a diverse mix of skills and perspectives within each group. This approach encouraged collaboration across different domains of engineering.

Each team was then assigned the task of identifying three real-world societal problems. Students were guided to apply empathy and functional thinking while selecting these problems, ensuring that their ideas were meaningful, relevant, and solution-oriented.

This activity helped students move from theoretical understanding to practical thinking, fostering teamwork, creativity, and problem-identification skills.

Day 2: (26/3/2026)

Session 1: Brainstorming on Solutions for problem statement

As part of the workshop, Dr. Sudhakar introduced a real-world problem statement to all six interdisciplinary teams. Each team was challenged to analyze the same problem and develop unique, innovative solutions, encouraging diverse thinking and practical application of engineering concepts.

Despite working on a common problem, all six teams demonstrated creativity by proposing different approaches and ideas.

Team Brainstorming Solutions for the Problem Statement

Problem Statement:

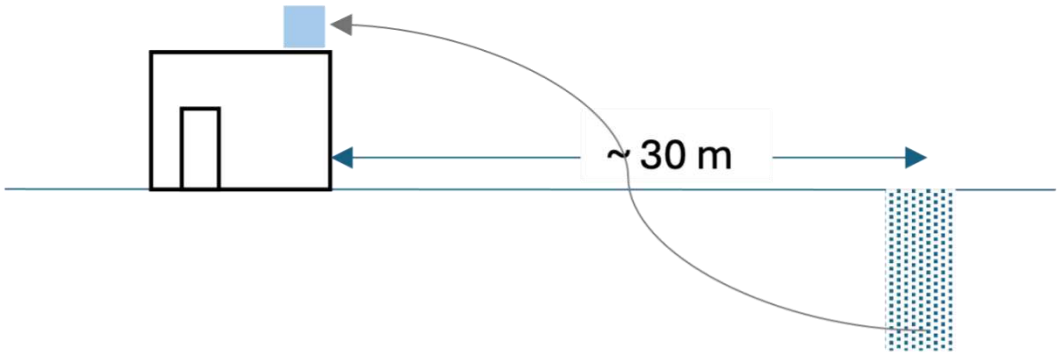
Design a system that alerts me when the submersible pump is on and the well runs dry. It may also automatically switch it off to prevent damage.

Context:

We moved into our current residence in October 2025 and rely entirely on well water for our daily needs. The well is located approximately 30 meters from the house and is more than 10+ meters deep.

When required, we switch on the submersible pump to pump water from the well to the overhead tank. There is an approximate delay of 20 to 30 seconds between switching on the pump and water reaching the tank. When the tank is empty, the incoming water produces a clearly audible sound at the switch location. As the tank fills, this sound gradually diminishes and becomes inaudible once the tank is more than half full. After the tank is more than half full, we cannot know whether water is being pumped.

With the onset of summer, the water level in the well has reduced significantly, and the recharge rate has slowed. There is a risk that the pump may run without sufficient water. If not switched off in time, this could damage the pump



Top-level Requirements

I am seeking a system that can:

1. Detect when the pump is running without an adequate water supply,
2. Provide an audible alarm to alert the user, and
3. Automatically switch off the motor to prevent damage.

Day 2: (26/3/2026)

Session 2: Presentation of Solutions proposed by teams

Following the forenoon session, the student teams presented solutions.

All six teams proposed diverse and creative solutions for the same problem statement:

- **Team 1: DryX**
- **Team 2: LoRa Dry-Run Monitoring System**
- **Team 3: Smart Ultrasonic Pump Protection System**
- **Team 4: Pump Protection System**
- **Team 5: AI-Powered Predictive Pump Sentinel**
- **Team 6: Dual Protection Pump System Using Float Control**

Presentation of Proposed Solutions by the Team to Experts

Each solution reflected a unique approach—ranging from IoT-based monitoring and AI-driven prediction to sensor-based and mechanical control systems.

Dr. K. Sudhakar Addressing the gathering with Concluding Remarks

Dr. Sudhakar appreciated all the teams for their innovative thinking, teamwork, and practical approach to solving a real-world engineering challenge.

Valedictory Address

In the concluding session, Dr. B. N. Suresh encouraged students to continuously observe and identify open-ended problems encountered in everyday life. He emphasized that engineering solutions should begin with real-world observation and curiosity.

He advised students to approach problem-solving in a hierarchical manner:

- Start by identifying issues within their immediate surroundings, such as the college campus
- Gradually expand their perspective to broader contexts, such as challenges faced in Bangalore city and beyond

Final Insights: Dr. B.N. Suresh Addresses the gathering

Dr. B.N. Suresh also suggested an innovative academic initiative— faculty coordinator should compile the identified problems into a compendium or problem repository book. This document can be maintained in the college library, enabling future students to refer to real-world problem statements and build solutions upon them. Such a resource would promote continuous learning, collaboration, and innovation across batches.

Dr. M. Brindha, Dean – Administration, delivered the Vote of Thanks, expressing sincere gratitude to the distinguished guests for their valuable presence and guidance. She thanked Dr. K. Sudhakar and Dr. B. N. Suresh for their inspiring sessions, appreciated the enthusiastic participation of students, and acknowledged the faculty coordinators for the support.

Dr. M. Brindha, Dean – Administration delivering the Vote of Thanks

Outcomes:

The Participants

- Developed a clear understanding of engineering as a problem-solving discipline beyond theoretical knowledge.
- Gained the ability to apply empathy and functional thinking in identifying real-world problems.
- Enhanced teamwork and interdisciplinary collaboration skills through group activities.
- Improved critical thinking and innovative solution design for practical challenges.
- Learned to approach problems in a structured and systematic manner, from identification to implementation.