



NATIONAL PUBLIC SCHOOL, KENGARI, BENGALURU

Report on Grade 11 'A' Educational Trip

The students of Grade 11 A were taken on an educational trip, to a robotics and automation laboratory at Christ University on 24th June 2026. The visit gave the students practical exposure to advanced robotics, microcontroller programming, and sensor integration. The students visited several labs, each introduced by the resource person, Mr. Umesh, who explained their focus and innovations.

The Project Lab focused on student-led innovation, where they saw design prototypes being developed, from smart devices to automated systems. The Advanced Robotics Lab displayed industrial robots, collaborative robots (Cobots), and mobile robots. Mr. Umesh explained their use in industries, such as assembly and logistics. The E-Mobility Lab examined robotic mobility, with demonstrations of robots navigating different terrains through wheels, legs, and tracks. In the Material Research Lab, the students explored new materials used in robotics, as Mr. Umesh highlighted how innovations in material science are crucial for making robots lighter and more durable. Finally, in the DAIMLER Lab, the resource person explained how companies provide vehicles, and students are working to convert them from mechanical systems to electric. They focused on retrofitting trucks with electric drivetrains, making them more efficient and environmentally friendly. A 3rd year student, Noel Thankachan explained that robotics is the science of creating machines capable of carrying out tasks autonomously. He detailed how robots rely on sensors to perceive their surroundings, processors to make decisions, and actuators to move. He also introduced different types of robots—like land robots, space robots, and agricultural robots—and he used multiple videos to show how each type functions in real-world environments. A highlight of the visit was the line-following robot activity in which they explained the concept of the robot, a simple autonomous device that uses optical sensors to detect a line on the ground and adjust its motors to stay on track. Using the Arduino ID, they coded the robot to follow a line by reading sensor inputs. The third-year students—Edwin Andrews, Chandan K S, I. Haran, Devika D S and Noel Thankachan—guided the students step-by-step, demonstrating how to build the line-following robot, from connecting the sensors and motors to coding the logic that kept the robot on track. The students gained deeper knowledge in robotics, microcontroller programming, sensor integration, and real-world applications of robots through this visit. These experiences reinforced theoretical concepts with practical demonstrations.

The visit was highly enriching, giving the students a glimpse into the future of automation and robotics. Mr. Umesh and the student team provided invaluable guidance, helping the students understand the coding logic and real-world relevance of these robotic systems.