JM INTERNATIONAL SCHOOL, DWARKA DELHI

MAY 2025

NEWSLETTER

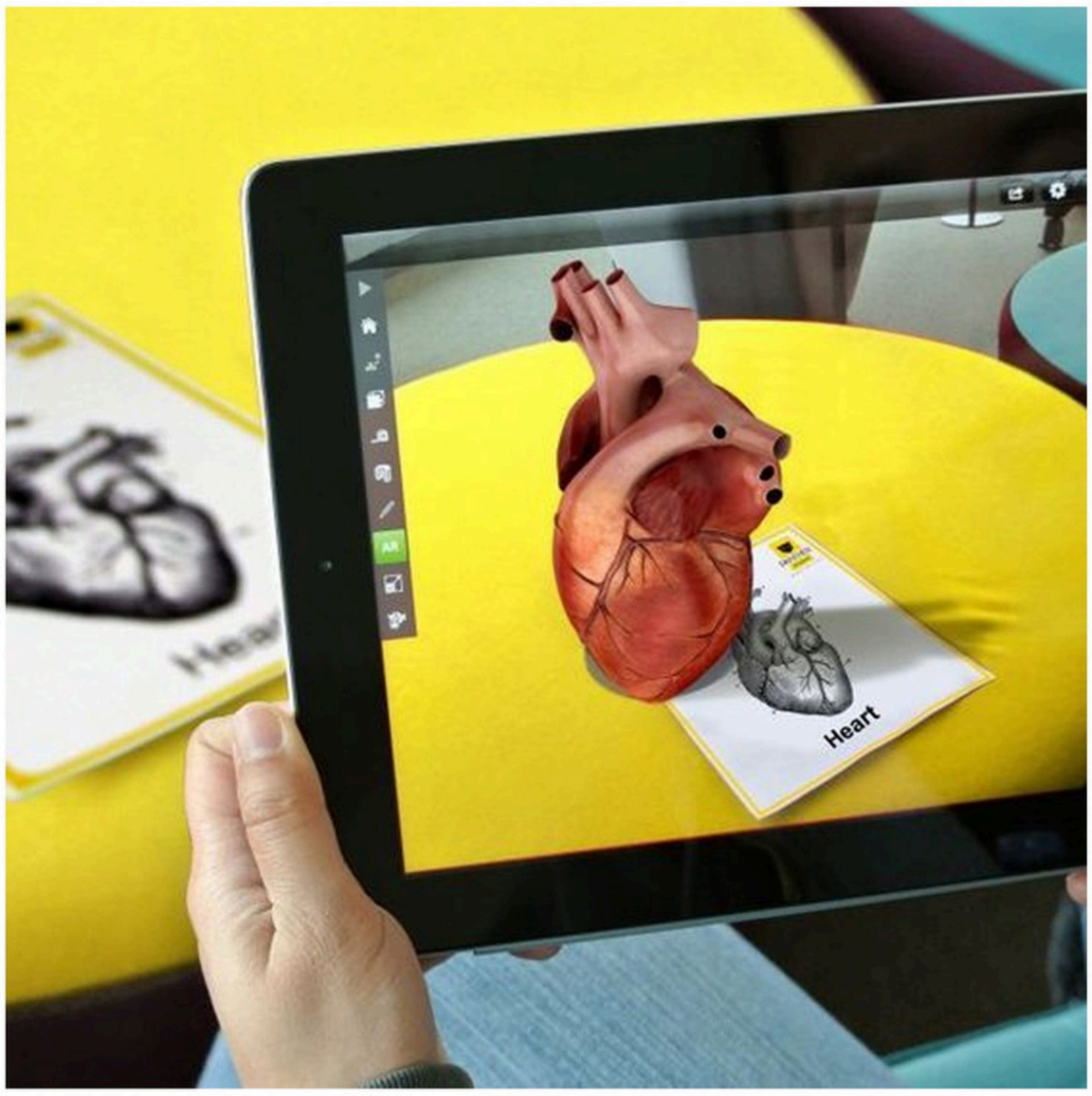
AUGMENTED REALITY(AR)

INTRODUCTION TO

AUGMENTED REALITY

Augmented reality (AR) is the integration of digital information with the user's environment in real time. Unlike virtual reality (VR), which creates a totally artificial environment, AR users experience a real-world environment with generated perceptual information overlaid on top of it.

Augmented reality is used to either visually change natural environments in some way or to provide additional information to users. The primary benefit of AR is that it manages to blend digital and three-dimensional (3D) components with an individual's perception of the real world. AR has a variety of uses, from decision-making to entertainment.



HOW DOES AN

AR MODEL WORK?

Augmented reality can be delivered in a variety of formats, including smartphones, tablets and glasses. AR delivered through contact lenses is also being developed.

The technology requires hardware components such as a processor, sensors, a display and input devices. Mobile devices already have this hardware, with sensors including cameras, accelerometers, Global Positioning System (GPS) and solid-state compasses.

WHAT IS A

VR SYSTEM?

VR is a virtual environment created with software and presented to users in such a way that their brain suspends belief long enough to accept a virtual world as a real environment. Virtual reality is primarily experienced through a headset with sight and sound.

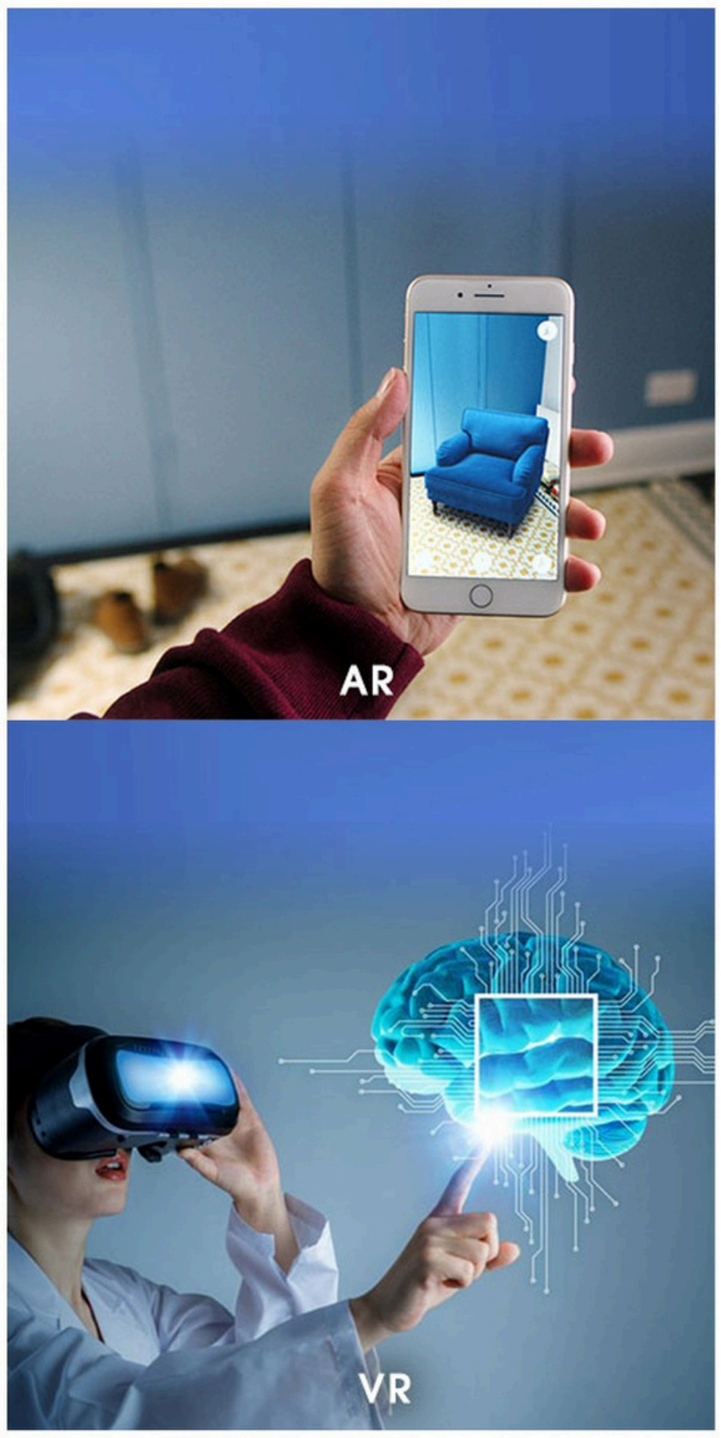
WHAT IS THE

DIFFERENCE BETWEEN AR & VR?

The biggest difference between AR and VR is that augmented reality uses the existing real-world environment and puts virtual information on top of it, whereas VR completely immerses users in a virtually rendered environment. While VR puts the user in a new simulated environment. Whereas AR places the user in a sort of mixed reality.

The devices used to accomplish this are different, too. VR uses VR headsets that fit over the user's head and present them with simulated visual and audio information. AR devices are less restrictive and typically include devices like phones, glasses, projections and HUDs in cars.

In VR, people are placed inside a 3D environment in which they can move around and interact with the generated environment. AR, however, keeps users grounded in the real-world environment, overlaying virtual data as a visual layer within the environment.



WHERE DO WE SEE

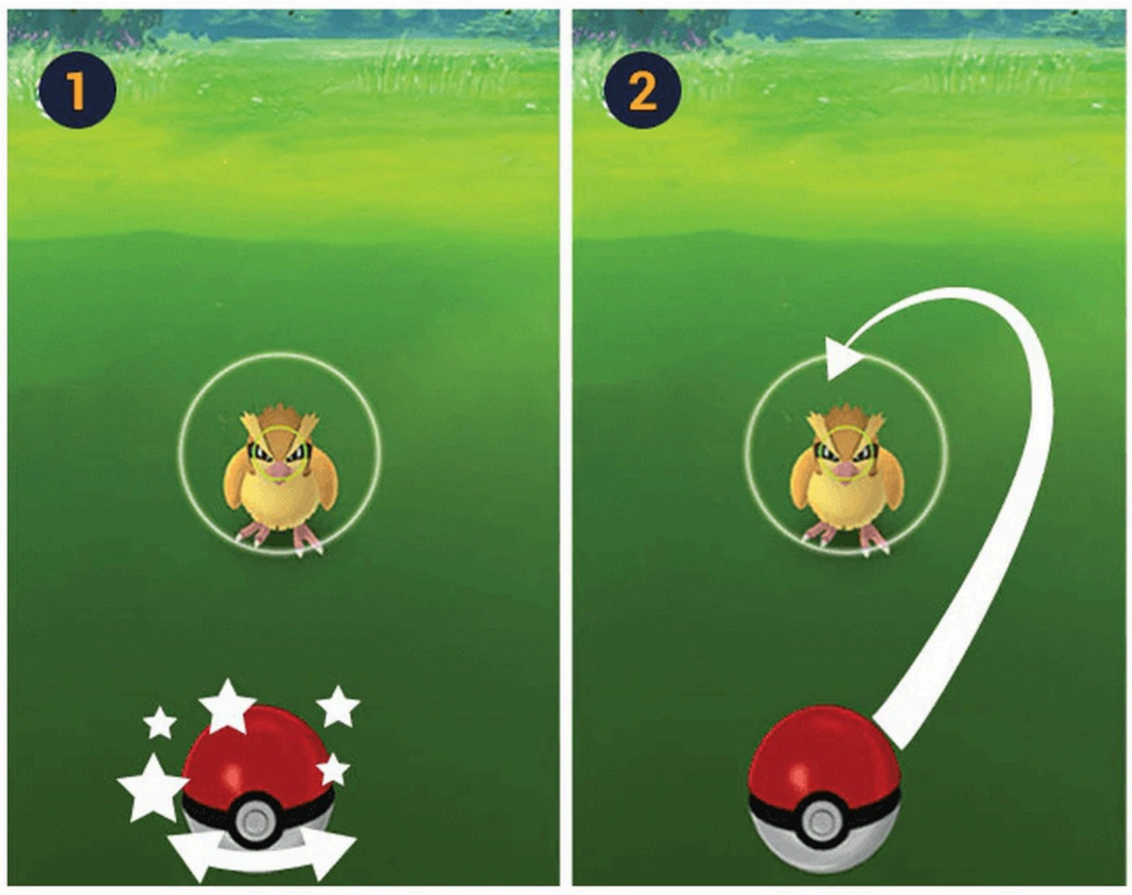
AUGMENTED REALITY

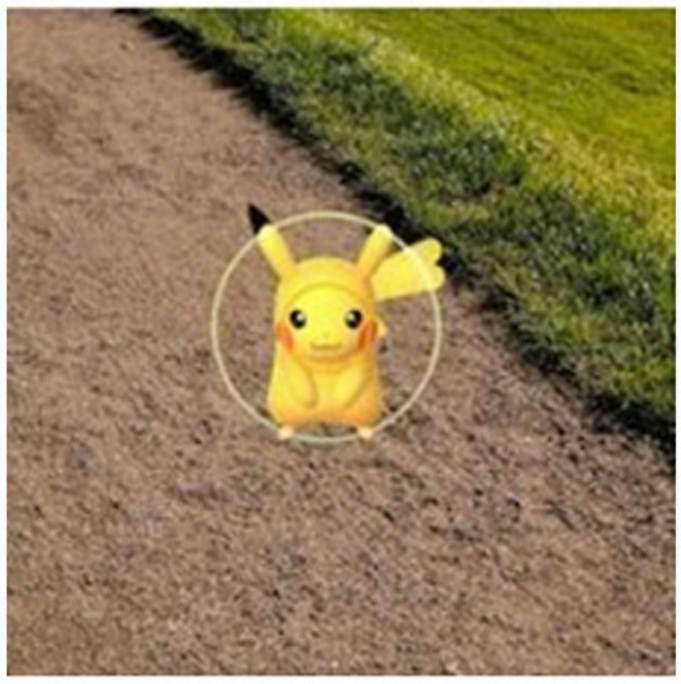
EVERYDAY

GAMES

Pokémon Go was simply a mobile game, the augmented technology built into the platform had a definite real-world effect on the humans playing it:

You can walk right up to a Pokémon for a chance at an Excellent Throw bonus or the perfect photo opportunity. Pokémon is aware of your movement, so proceed with caution. Move toward a Pokémon too fast and you'll scare it away...but approach slowly, and you'll have a better chance at catching it.





OTHER EXAMPLES OF AR

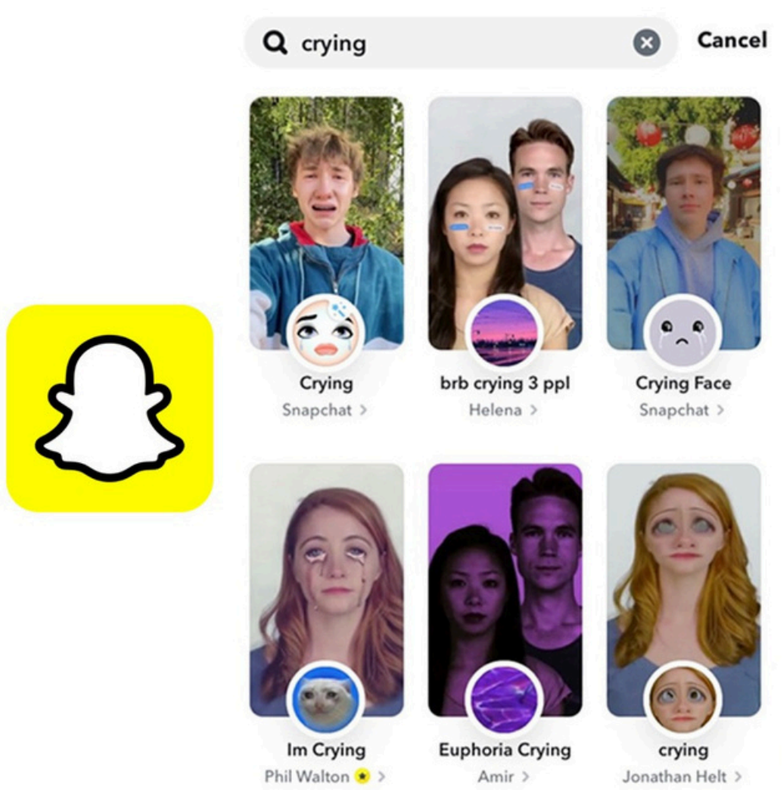
AUGMENTED REALITY

INCLUDE THE FOLLOWING

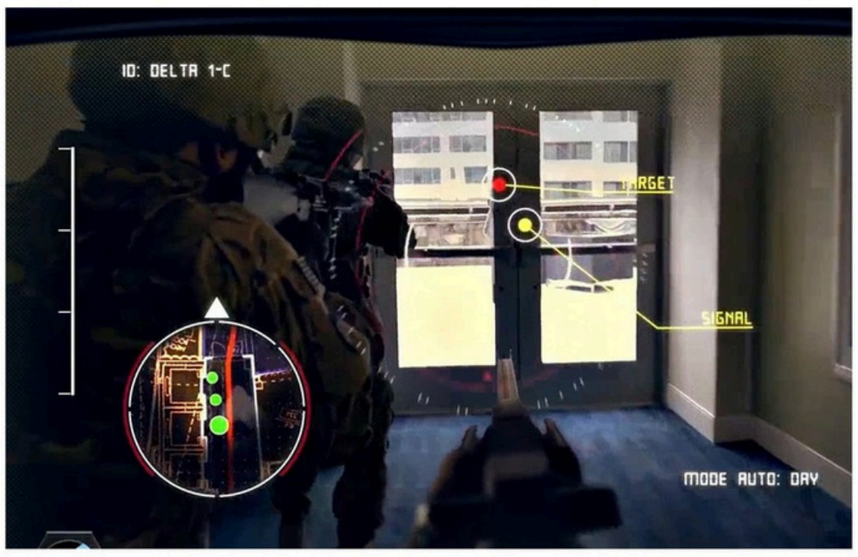
Target app: The Target retail app feature called "See it in Your Space" enables users to take a photo of a space in their home and digitally view an object, like a picture on the wall or a chair, to see how it will look there.

Apple Measure app: The Measure app on Apple iOS acts like a tape measure by enabling users to select two or more points in their environment and measure the distance between them.

Snapchat: Snapchat filters use AR to overlay a filter or mask over the user's Snap or picture.



U.S. Army: The U.S. Army uses AR in an eyepiece called Tactical Augmented Reality (TAR). TAR mounts onto the soldier's helmet and aids in locating another soldier's position.



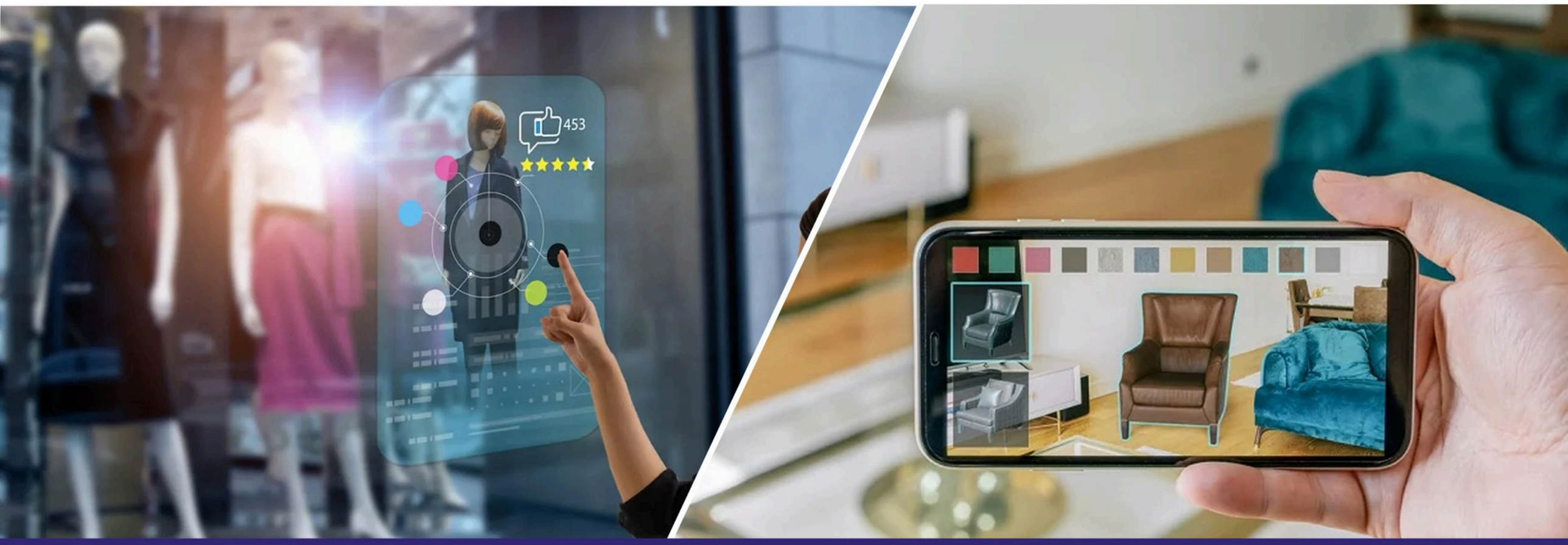
WHAT IS THE FUTURE OF

AUGMENTED REALITY?

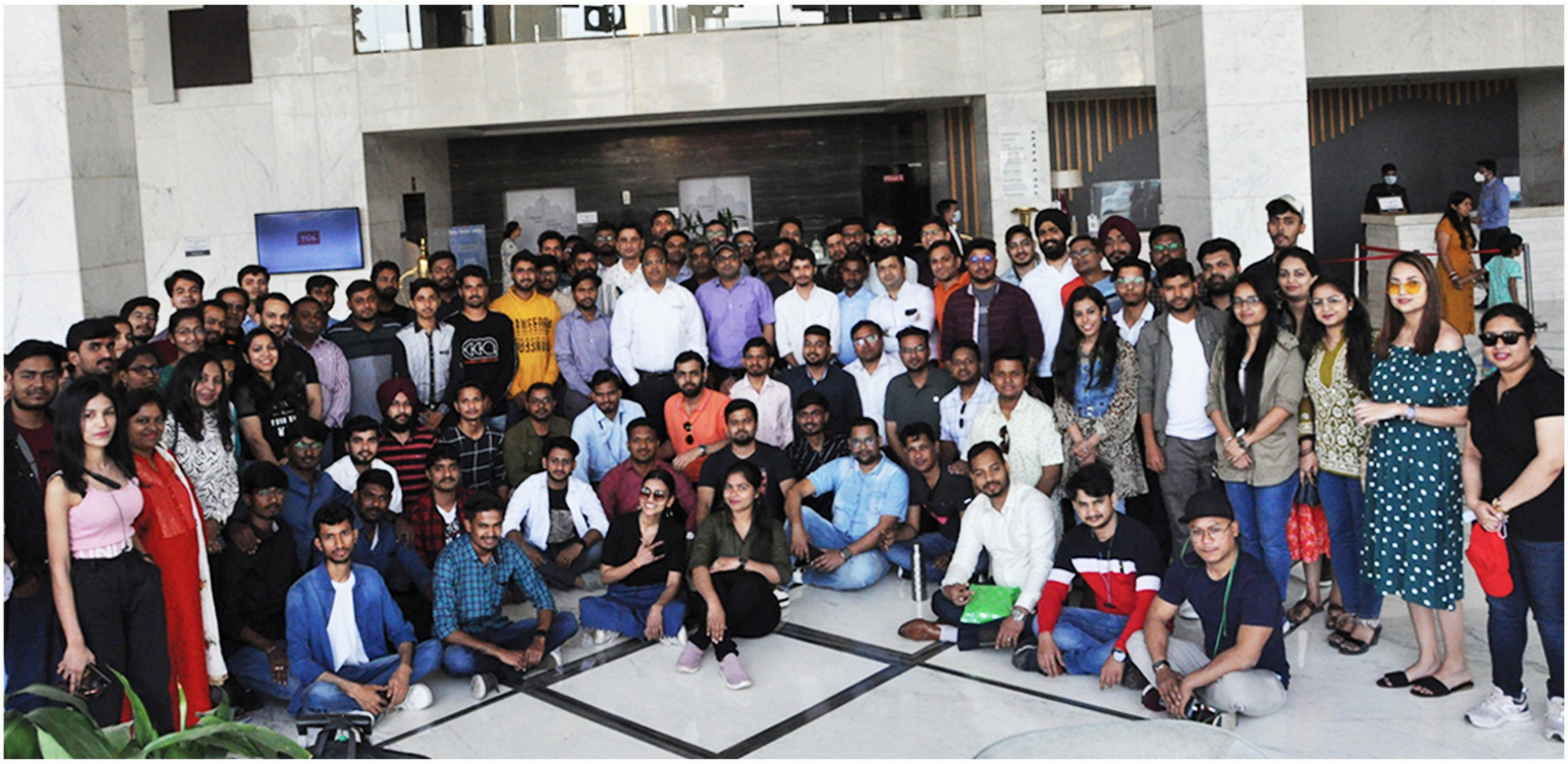
Innovative technologies transform science fiction into reality, and AR is undoubtedly one of them. Holograms, like in the Star Wars and the Marvel movies, now surround us in the real world, bringing a new immersive experience, and it's more than just entertainment. Today, augmented reality is an effective business tool.

Across several different industries like retail, business, gaming, healthcare, and even the military, augmented reality is used for solving various business challenges. It's important to keep an eye on these technologies to know where the industry is heading. We will discuss about 7 of the future trends that will be an outcome to the evolution of Augmented Reality.

- Leap into the Metaverse
- Augmented Reality in Marketing
- Mobile Augmented Reality Evolution.
- WebAR: Better Accessibility with Compromise
- Cross-Platform AR Gains Prominence
- Healthcare and Augmented Reality
- Augmented Reality Shopping Experiences



ABOUT
STEMROBO TECHNOLOGIES



STEMROBO Technologies Pvt Ltd is an Indian company that provides education and training services in the field of STEM (Science, Technology, Engineering, and Mathematics) and robotics. The company's aim is to promote hands-on learning and innovation among young students by providing them with educational kits, training programs, and workshops.

Stemrobo Technologies Pvt Ltd offers a range of products and services, including robotics kits, coding kits, and educational software. The company's products are designed to be user-friendly and provide a fun and engaging way for students to learn about STEM subjects. In addition to its educational products, Stemrobo Technologies Pvt Ltd also conducts workshops and training programs for students, teachers, and educational institutions. These programs are designed to help participants learn the basics of robotics and coding, and develop their skills in these areas.

Importance of STEM Education for Kids

The term "STEM" typically refers to a group of academic disciplines that are focused on science, technology, engineering, and mathematics. it prepares them for the future by building problem-solving skills, encouraging curiosity and exploration, fostering collaboration and communication skills, and addressing global challenges that require STEM principles for their solution.

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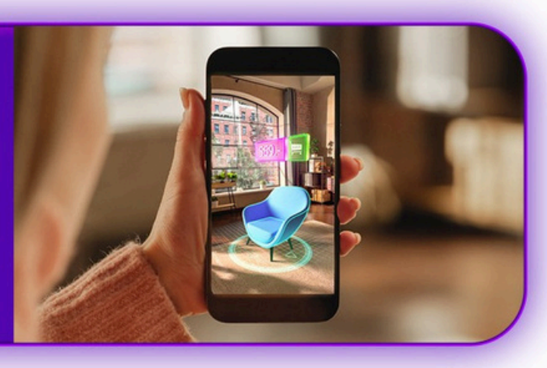
About Robotics Lab

The Robotics Lab is a dedicated workspace where students can learn, experiment, and transform their ideas into prototypes. Designed to foster creativity beyond rote learning, the lab encourages students to explore futuristic skills such as design and computational thinking, adaptive learning, and artificial intelligence.

Equipped with state-of-the-art tools and equipment like 3D printers, robotics kits, and electronic components, the Robotics Lab provides a hands-on learning experience in science, technology, engineering, and mathematics (STEM) fields. The primary goal is to cultivate problem-solving and critical thinking skills from an early age. By promoting experimentation and innovation, the lab aims to nurture the next generation of innovators and entrepreneurs, preparing them for future challenges and contributing to the overall development of India's technological landscape.

FUN FACT

Two-thirds of shoppers think AR would help them make better buying decisions.



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GLIMPSE OF ACTIVITIES

Grade I – Linker Connectors Kit:

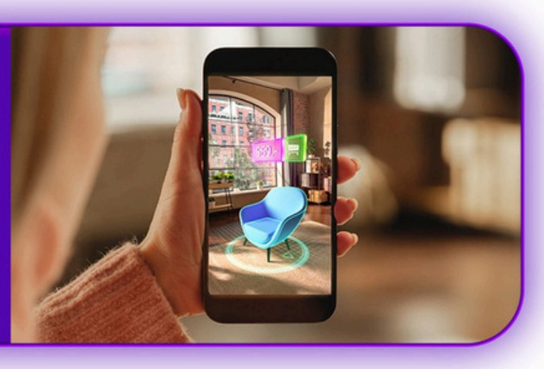
The Linker Connectors Kit encouraged creativity and hands-on learning by allowing students to construct various 3D models using simple connectors and rods. Consequently, it helped enhance spatial thinking, critical problem-solving skills, and an understanding of structural integrity through engaging, hands-on exploration.

Activities included:

- **Cycle:** Helped students understand the structure and balance of moving objects, enhancing fine motor skills and symmetry awareness.
- **Chair:** Introduced the concept of support and stability, promoting logical thinking and functional design visualization.

FUN FACT

Virtual Reality can trick your brain so well that your body reacts as if what you're seeing is real—even causing faster heartbeat and sweating!



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GLIMPSE OF ACTIVITIES

Grade II – Linker Connectors Kit:

The Linker Connectors Kit encouraged creativity and hands-on learning by allowing students to construct various 3D models using simple connectors and rods. Consequently, it helped enhance spatial thinking, critical problem-solving skills, and an understanding of structural integrity through engaging, hands-on exploration.

Activities included:

- **Basketball Hoop:** This activity helped students understand circular structures and support systems. Moreover, it promoted hand-eye coordination and design thinking.
- **Beach Ball**: Through this task, students were introduced to the concept of spherical shapes and balance. In addition, it enhanced their creativity and understanding of 3D geometric forms.

FUN FACT

AR is 3 times more memorable compared to traditional non-AR media.

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GLIMPSE OF ACTIVITIES

Grade III – Micro:bit Kit:

The Micro:bit Kit provided students with an engaging introduction to coding and electronics. It encouraged logical thinking, creativity, and problem-solving through interactive, hands-on activities. As a result, students gained a foundational understanding of microcontrollers and how software can control hardware in real time.

Activities included:

- **Display Icons:** In this activity, students programmed the Micro:bit to display various icons on its LED matrix. Consequently, they learned about basic coding concepts, sequencing, and output display while expressing their creativity through custom patterns.
- **Introduction to Real-World Robots:** Additionally, students were introduced to some famous real-world robots such as ASIMO and NAO. This helped them understand the practical applications of robotics in daily life and inspired curiosity about advanced technology and automation.

FUN FACT

By 2024, there will be 1.73 billion active augmented reality device users.

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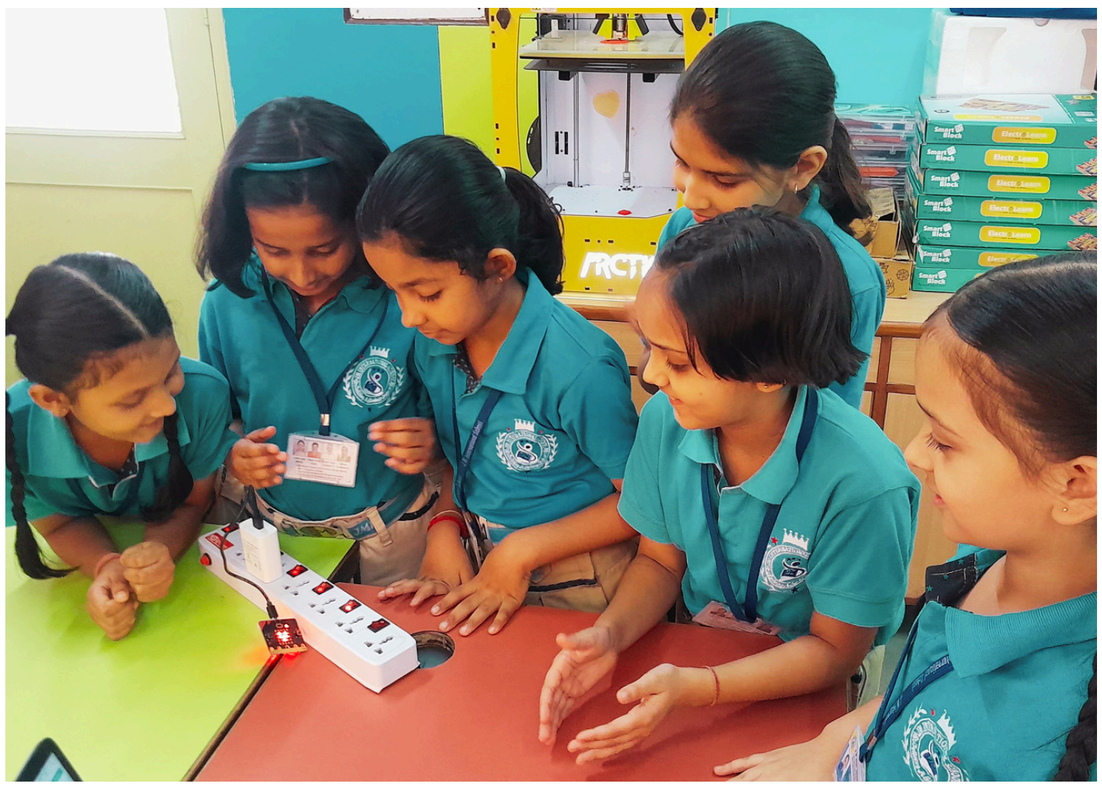
GLIMPSE OF ACTIVITIES

Grade IV – Micro:bit Kit



The Micro:bit Kit helped students develop coding and electronics skills through practical, hands-on projects. It enhanced their creativity and problem-solving abilities.

Activities Included

- **Name Badge:** Students programmed the Micro:bit to display their names, improving their skills in text display and sequencing.
- **Clap Heart:** Using the sound sensor, students triggered a heart animation upon clapping, learning about event-driven programming.
- **Touch Heart**: Students explored touch sensors by displaying a heart icon when specific pins were touched, gaining insight into hardware input and output interactions.

FUN FACT

Augmented reality (AR) revenue is projected to reach $198 billion by 2025, a significant increase from $3.5 billion in 2017.

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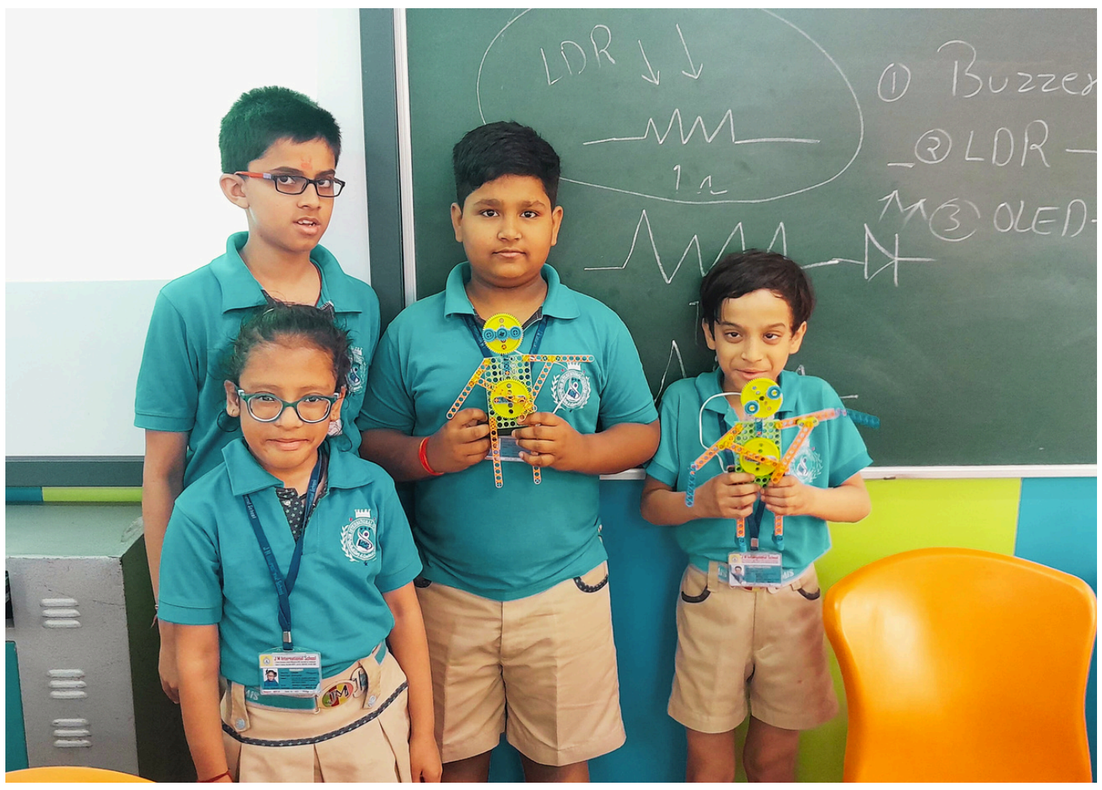
GLIMPSE OF ACTIVITIES

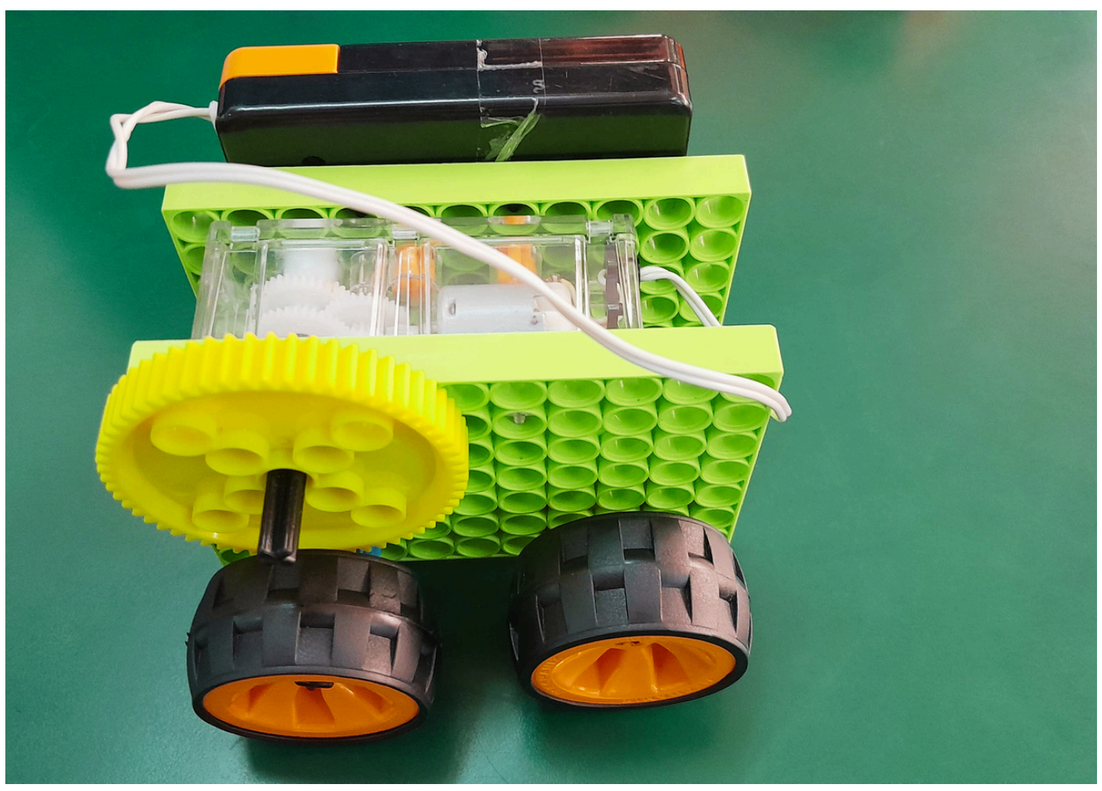
Grade V – Robotics Block-Based
Construction Kit

The Robotics Block-Based Construction Kit encouraged students to explore mechanical design and basic robotics through hands-on building and coding. This kit helped develop their critical thinking, engineering concepts, and block-based programming skills.

Activities Included

- **Gear Car:** Students constructed and programmed a gear-driven car, learning about gear ratios, motion mechanics, and the basics of motor control.
- **Waving Robot:** This activity involved building a robot that could perform waving motions, introducing students to servo motors and sequential programming concepts.





FUN FACT

Virtual Reality can make people feel like they're actually touching or moving objects, even though nothing is physically there—showing how powerful the brain's senses really are!

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GLIMPSE OF ACTIVITIES

Grade VI – Tinker Orbit kit & Arduino

The Arduino UNO and Tinker orbit Kit introduced students to microcontroller programming and electronics fundamentals. Through hands-on projects, students enhanced their understanding of coding, circuit design, and sensor integration, fostering critical thinking and problem-solving skills.

Activities Included

- **Introduction to Arduino UNO:** Students learned the basics of the Arduino UNO board, including its components, programming environment, and simple input/output operations. This foundational activity built confidence in working with microcontrollers.
- **Light Dimmer using Potentiometer:** In this project, students programmed the Arduino to control LED brightness using a potentiometer.

FUN FACT

Virtual Reality lets people practice dangerous or difficult tasks in a safe, controlled environment, reducing risks and improving skills before doing them in real life.

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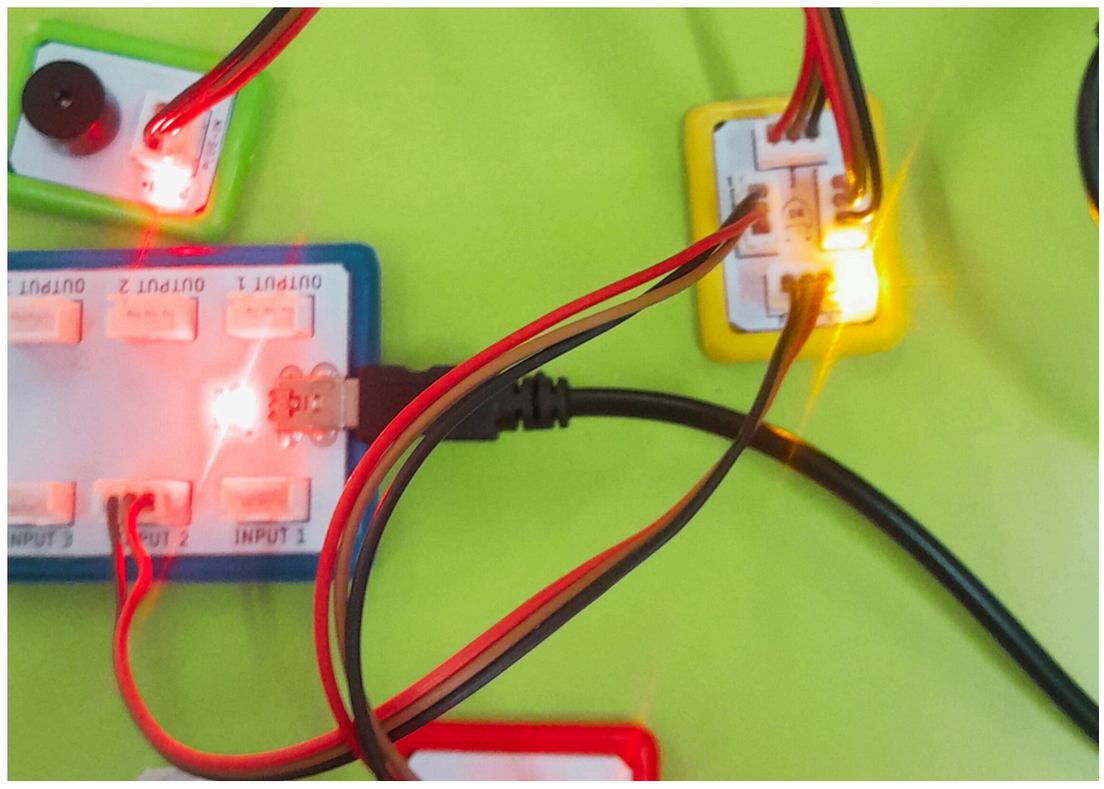
GLIMPSE OF ACTIVITIES

Grade VII – Tinker Orbit Kit

The Tinker Orbit Kit engaged students in building and programming practical security devices, helping them develop skills in electronics, sensors, and circuit design. Through these hands-on projects, students enhanced their understanding of real-world applications of technology and strengthened problem-solving abilities.

Activities Included

- **Burglar Alarm:** Students constructed a basic burglar alarm system that detects unauthorized entry using sensors. This activity taught them about motion detection, circuit integration, and alarm signaling.
- **Anti-Theft System:** In this project, students designed an anti-theft system with enhanced security features, learning about sensor-based triggers, circuit logic, and device activation to prevent theft.



FUN FACT

Virtual Reality helps people learn and train safely by letting them practice surgeries, explore space, or travel the world—all without leaving home.

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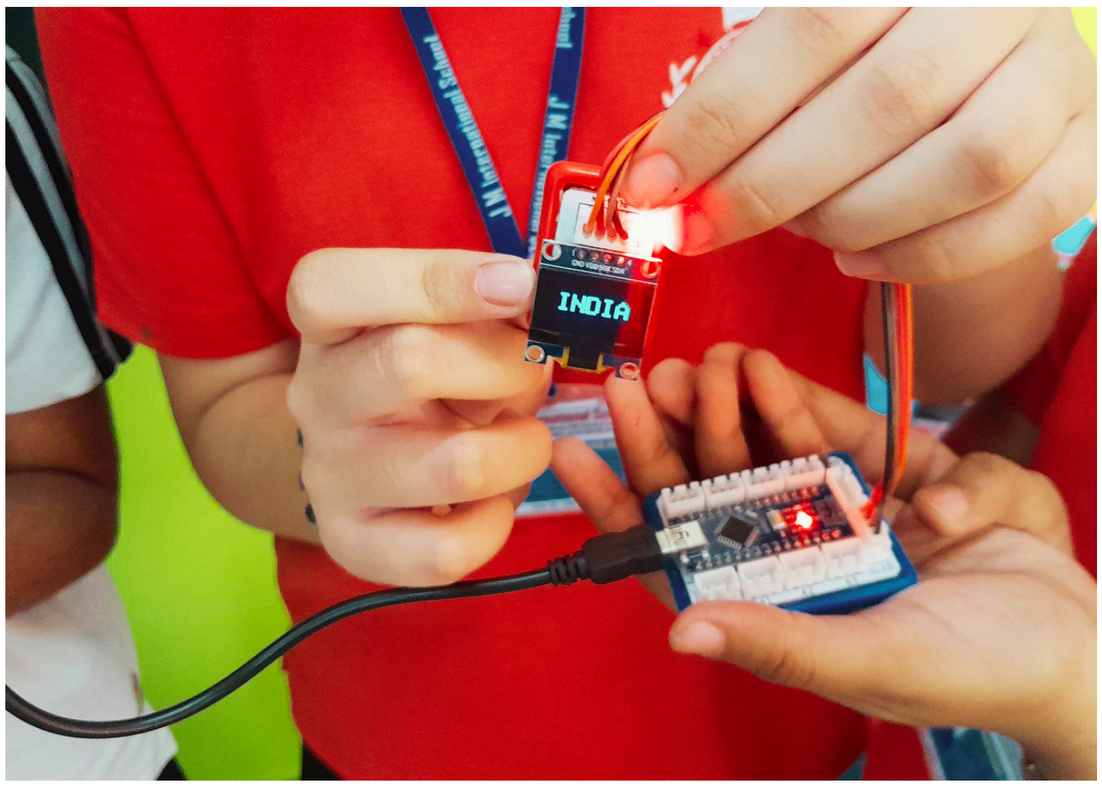
GLIMPSE OF ACTIVITIES

Grade VIII – Tinker Orbit Kit

The Tinker Orbit Kit provided students with hands-on experience in building and programming electronic projects. These activities helped them deepen their understanding of sensors, displays, and system integration while enhancing coding and circuit design skills.



Activities Included

- **Display Text on OLED:** Students programmed the OLED display module to show custom text messages. This activity strengthened their knowledge of display technology, communication protocols, and coding for visual output.
- **Project Weather Monitoring System:** In this project, students built a weather monitoring system that measured parameters such as temperature and humidity. They learned how to integrate sensors, collect data, and create real-time monitoring systems using the Tinker Orbit Kit.

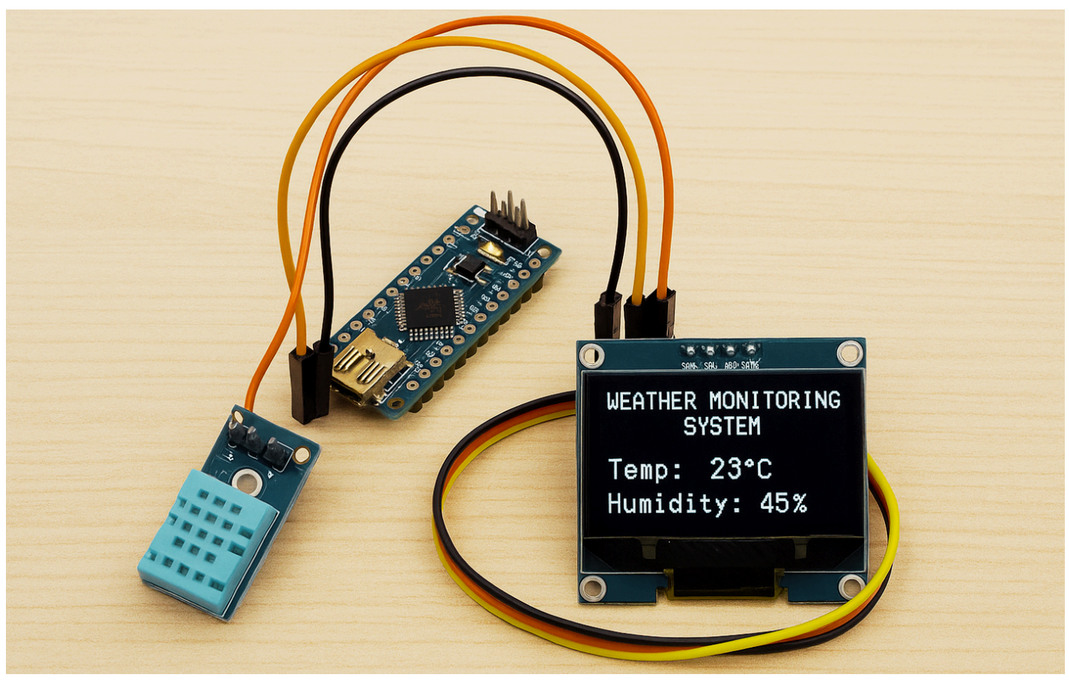
FUN FACT

In the future, VR will change how we learn, work, and play by creating lifelike virtual experiences that connect people everywhere.

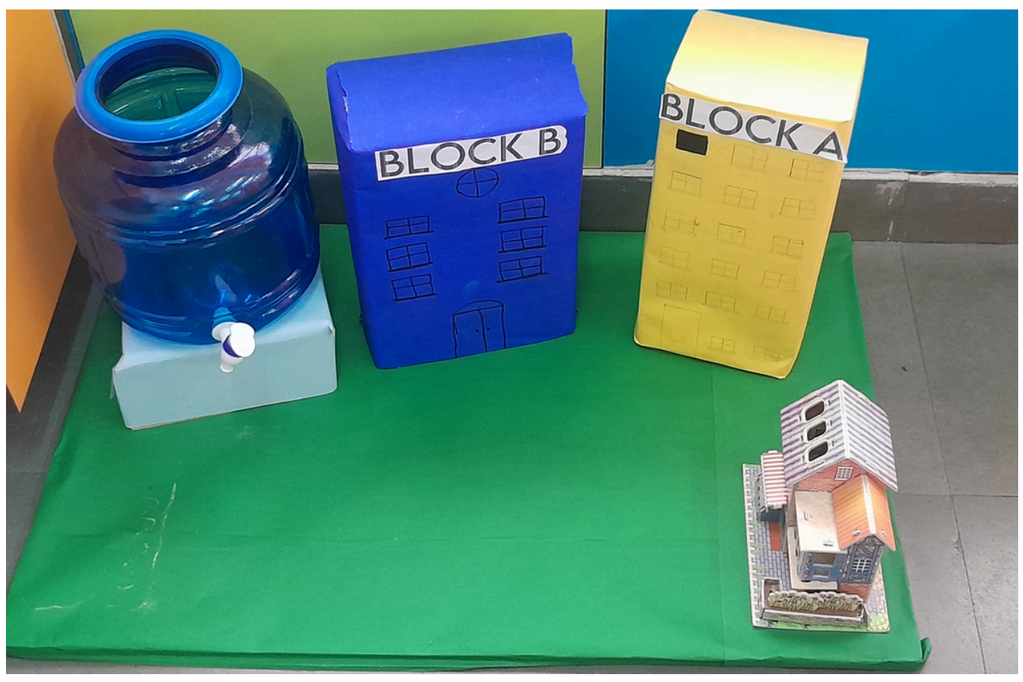
GLIMPSE OF PROJECTS

Project List

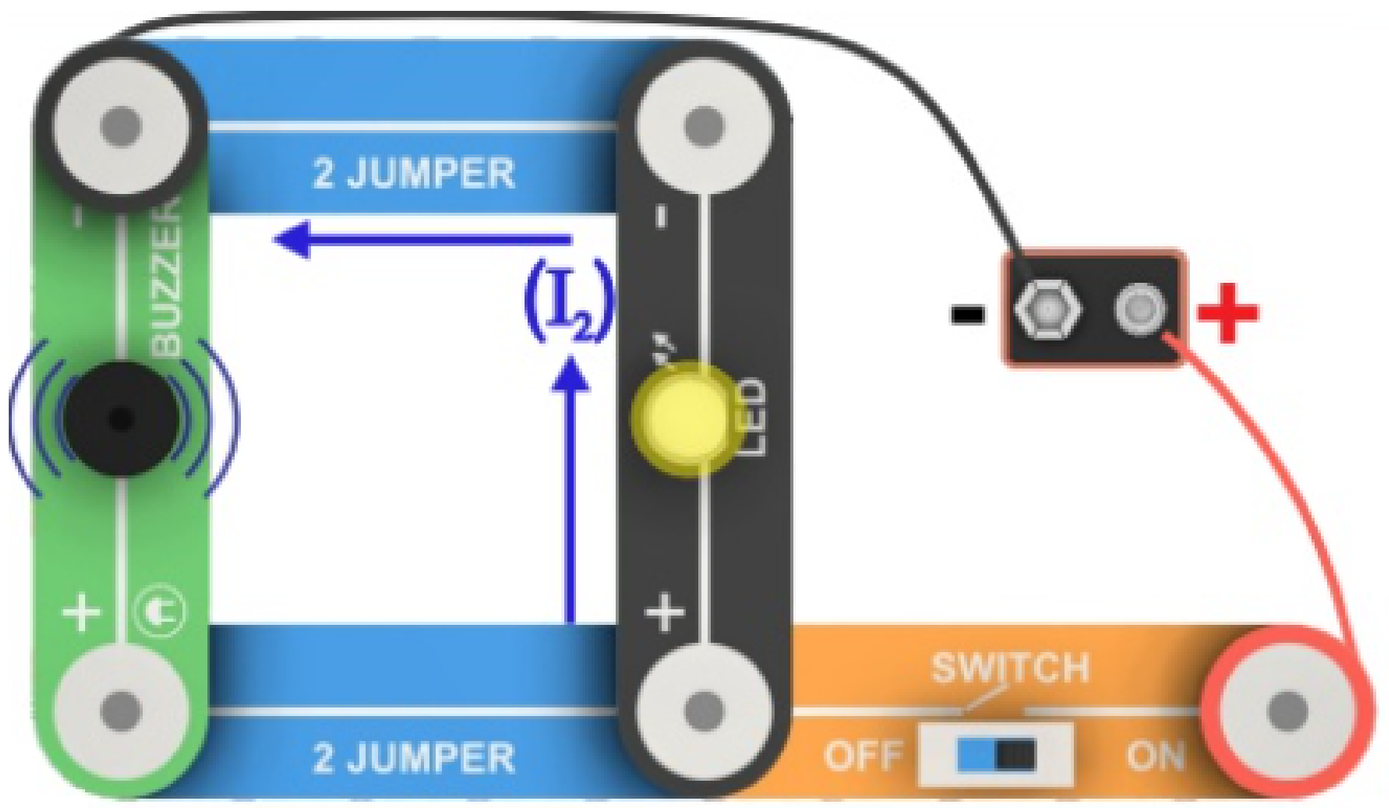
1. Weather Monitoring System



2.Smart Water Management system

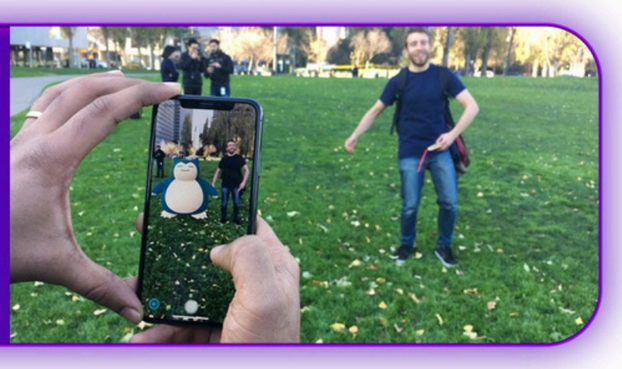


3. Fire Alarm Project

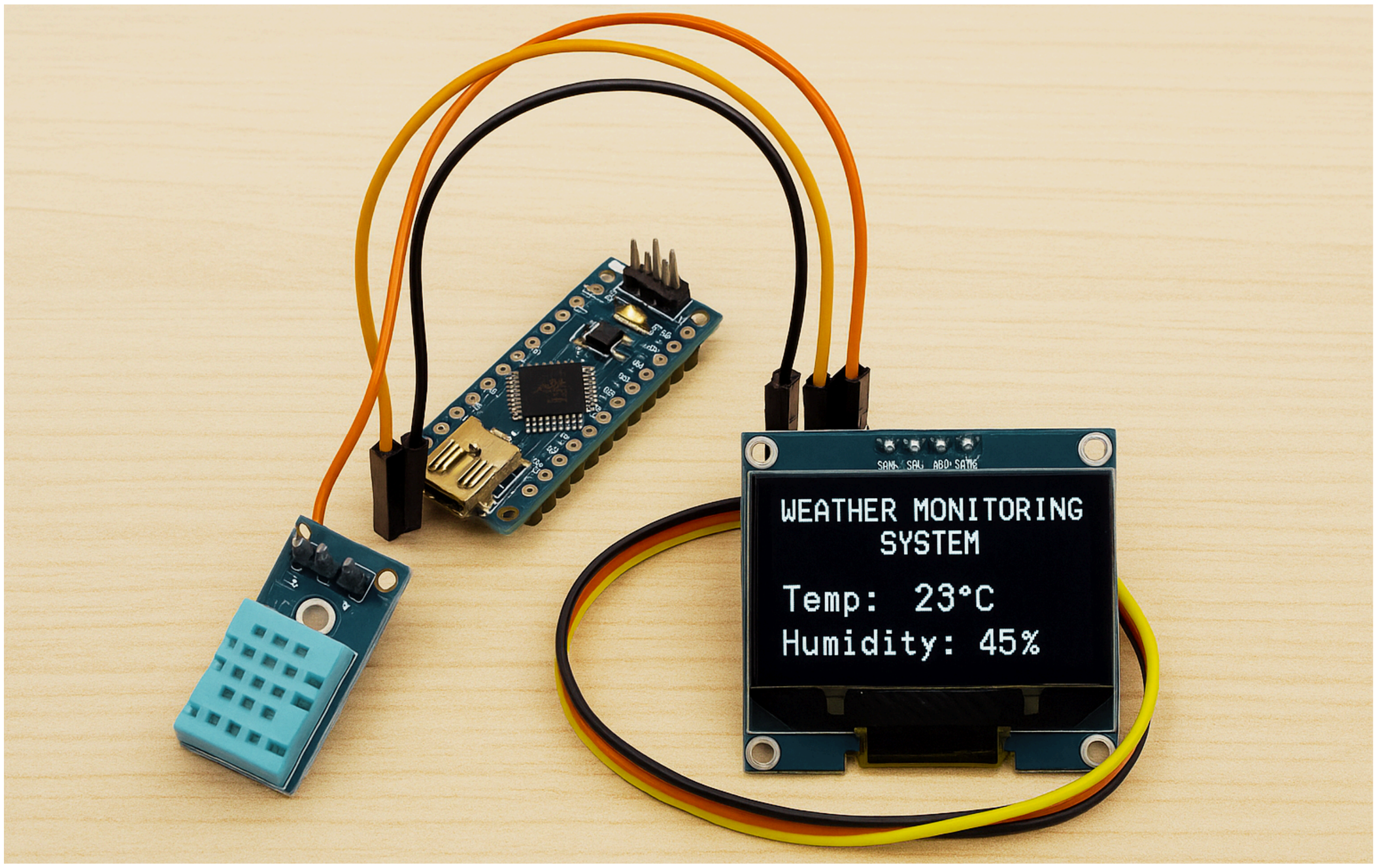


FUN FACT

In 2016, Pokémon GO, an AR mobile game, had over 28.5 million daily active users at its peak.



GLIMPSE OF
PROJECTS
Weather Monitoring System



The weather monitoring system uses the DHT11 sensor to measure temperature and humidity from the surrounding environment. The sensor sends this data to the Arduino Nano, which processes the information. The Arduino then displays the real-time temperature and humidity readings on a small OLED screen, allowing users to easily monitor weather conditions. This project helps students learn about sensor integration, data acquisition, and display programming using microcontrollers.

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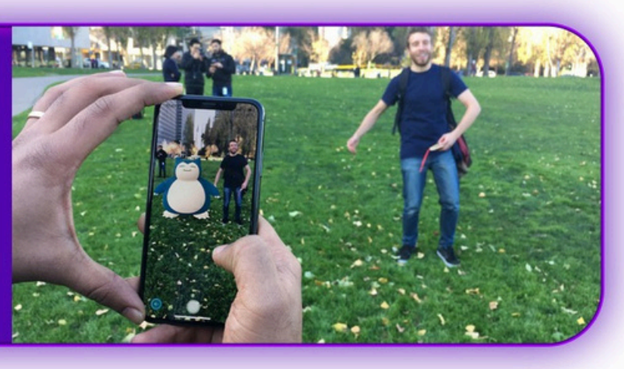

ACHIEVEMENTS
AT A GLANCE

Foundation in Electronics and Robotics

Students developed a strong foundational understanding of electronics, sensors, and robotics through structured hands-on learning with kits like Smart Circuit, Tinker Orbit, and Bitli.

Successful Project Implementation

Learners independently built real-life projects such as the Dark Room Safety Alarm, Torch Light, Gear Car, and Waving Robot, demonstrating their ability to translate theoretical knowledge into practical solutions.

Innovation through Creative Projects

By executing innovative projects like Smart Watches, Laser Security Systems, and Anti-Theft Alarms, students showcased creativity, design thinking, and technical integration.

Improved Technical and Analytical Skills

Working with components like Arduino Nano, OLED displays, motors, and sensors, students enhanced their skills in programming, circuit design, and problem-solving.

Connected STEM to Real-World Scenarios

Projects aligned with real-life challenges helped students understand the practical relevance of STEM and its impact on daily life, with examples including Automatic Fans and Smart Morning Alarms.

Boosted Creativity, Confidence, and Teamwork

Collaborating in teams built confidence and communication skills—key traits for future innovators.

Showcasing Emerging Technologies

By introducing microcontrollers and automation concepts at an early stage, students are better prepared for advanced STEM education and future tech careers.

FUN FACT

AR is transforming healthcare, with applications in surgery, medical training, and patient care.

THANK YOU

CONTACT US

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