



**NOVEMBER
2024**

NEWSLETTER

**GOAL 9:
INNOVATION, INFRASTRUCTURE, AND
INDUSTRY**

(Sustainable Development Goals)



**JM International School Dwarka,
New Delhi**

OVERVIEW OF SUSTAINABLE DEVELOPMENT GOALS

- The 70th Session of the UN General Assembly held on 25th September 2015 adopted the Sustainable Development Goals (SDGs) with 17 goals and 169 targets, under the official agenda “Transforming our world: the 2030 Agenda for Sustainable Development”. India is a signatory to this landmark agreement.



70 Session of UN General Assembly, New York , 25th Sept. 2015

- Officially, the SDGs came into effect from 1st January 2016.
- Member Countries have the responsibility for follow-up and review the progress made in implementing the goals and targets.
- SDGs is an inter-governmentally agreed set of goals relating to international development which aims at meeting the needs of the present without compromising the ability of future generations to meet their own needs.

17 GOALS OF SDG



WHAT IS GOAL 9

INNOVATION, INFRASTRUCTURE, & INDUSTRY

Sustainable Development Goal 9 (SDG 9) focuses on building resilient infrastructure, promoting inclusive and sustainable industrialization, and fostering innovation. As we navigate a rapidly changing world, investing in infrastructure and technology is essential to ensure sustainable economic growth and address global challenges like climate change and inequality.

This newsletter highlights the importance of SDG 9, shares inspiring stories, and explores how each of us can contribute to a more innovative and sustainable future.

SDG 9 emphasizes three core areas:

Resilient Infrastructure: Ensuring reliable, sustainable infrastructure, especially in developing countries, to support economic growth and well-being.

Sustainable Industrialization: Promoting industries that are environmentally friendly and economically beneficial.

Innovation: Encouraging research, technological advancement, and creativity to drive solutions to global challenges.



KEY THEMES OF SDG 9?

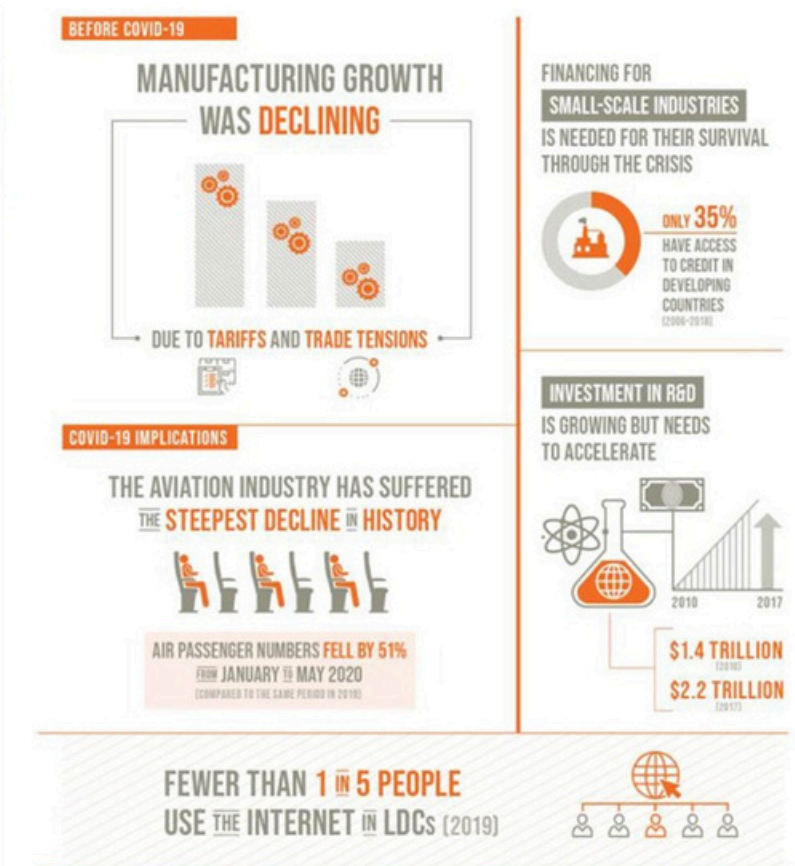
- 1. Why Infrastructure Matters:** Infrastructure—roads, bridges, energy systems, and communication networks—forms the backbone of any economy. Reliable infrastructure improves access to markets, enhances productivity, and fosters social inclusion.
- 2. Sustainable Industry:** Traditional industries often contribute to pollution and resource depletion. SDG 9 advocates for modernizing industries to make them more sustainable, promoting practices that reduce environmental impact while boosting economic output.
- 3. The Power of Innovation:** Innovation drives progress. From renewable energy technologies to new medical solutions, advancements improve lives and address global challenges. Supporting research and development (R&D) is critical for future success.

GLOBAL PROGRESS:

- **Solar-Powered Roads in France:** France introduced the world's first solar panel road, turning highways into energy producers. Projects like this pave the way for sustainable infrastructure.
- **Smart Cities in Singapore:** By investing in smart infrastructure, Singapore has improved urban planning, reducing traffic congestion and energy use.
- **Rural Connectivity in Kenya:** Community-driven internet projects have connected remote villages, improving education and healthcare access.

WHAT ARE THE CHALLENGES FACED IN SDG 9?

- **Limited Financing:** Lack of funds for infrastructure and industrial projects, especially in developing countries.
- **Technological Gaps:** Uneven access to modern technologies, hindering innovation.
- **Inadequate Infrastructure:** Poor transport, energy, and internet systems, particularly in rural areas.
- **Environmental Impact:** Industrialization often leads to pollution and resource depletion.
- **Inequality:** Industrial growth is concentrated in urban areas, widening rural-urban disparities.
- **Low R&D Investment:** Insufficient funding for research and development limits innovation.



LOOKING FORWARD:

How will you contribute to innovation and sustainable infrastructure this month? Share your efforts using #SDG9Action on social media.

HOW CAN WE MAKE A DIFFERENCE?

Support Local Infrastructure Projects: Advocate for better roads, schools, and technology in your community.

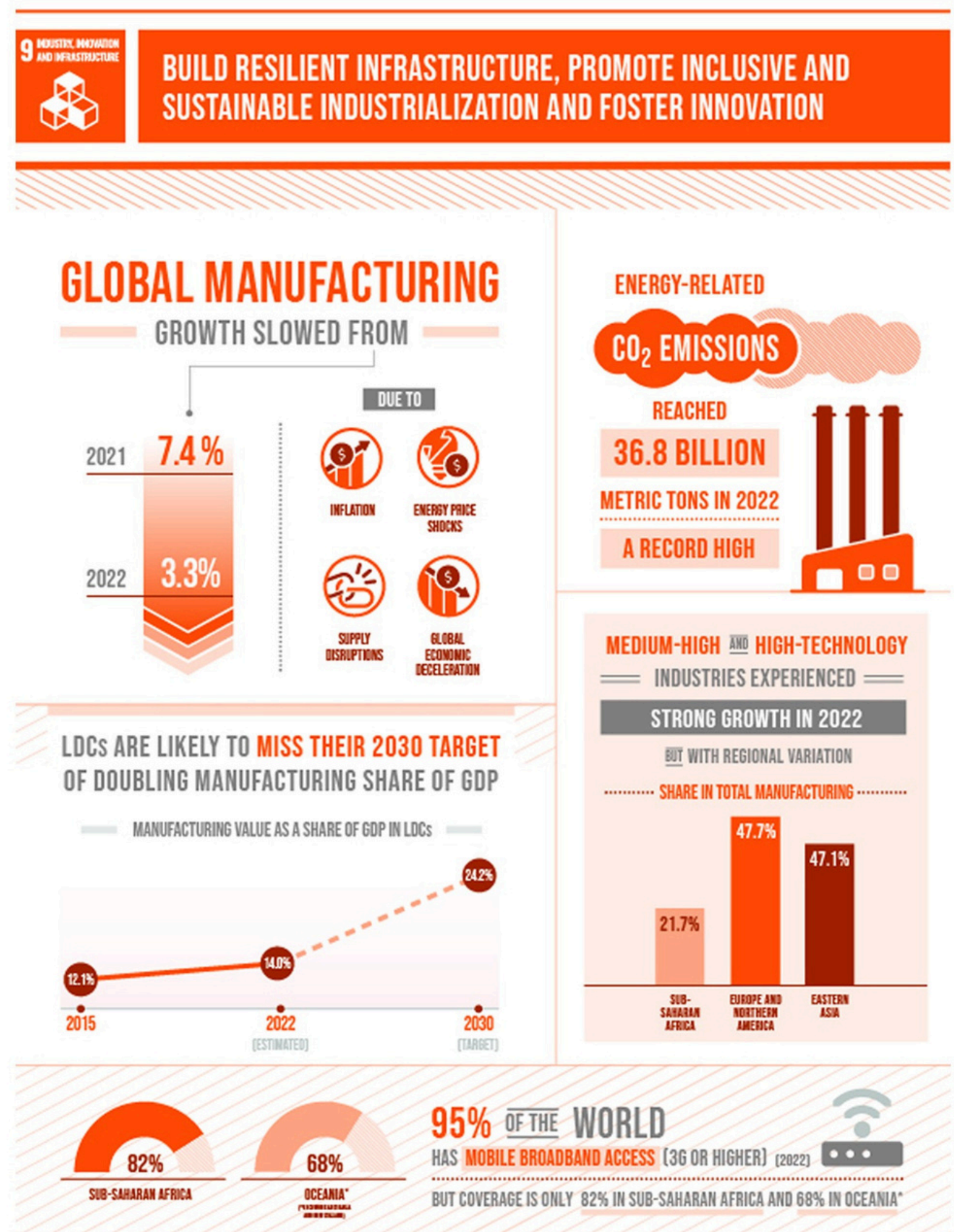
Promote Sustainable Industry: Choose eco-friendly products and support companies with green practices.

Encourage Innovation: Support local startups and tech initiatives—small ideas lead to big changes!

Invest in Education: Push for programs that teach science, technology, and engineering skills.

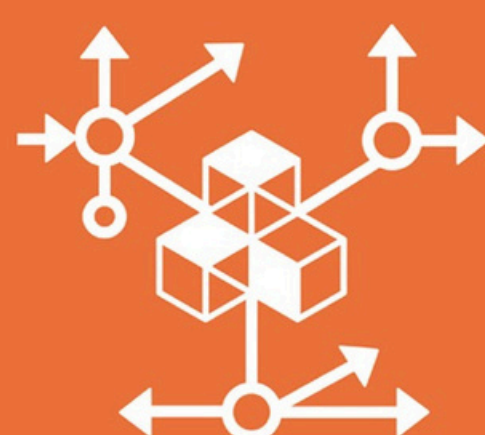
Bridge the Digital Divide: Donate old devices or support efforts to bring internet access to rural areas.

Public-Private Partnerships: Encourage your workplace or community leaders to collaborate on infrastructure projects.



THE SUSTAINABLE DEVELOPMENT GOALS REPORT 2023: SPECIAL EDITION- [UNSTATS.UN.ORG/SDGS/REPORT/2023/](https://unstats.un.org/sdgs/report/2023/)

TARGET 9-5



ENHANCE RESEARCH AND UPGRADE INDUSTRIAL TECHNOLOGIES

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



HOW TO ACHIEVE SDGs

- A localized approach to address the unique challenges and opportunities present at the local level. By building a Local SDG Agenda tailored to gender equality, we can effectively target and implement initiatives that promote women's rights and empowerment.
- Creating an environment where multiple stakeholders—including civil society, private sector organizations, professional associations, and other agencies—actively participate in gender-focused initiatives is crucial. These collaborative efforts can drive meaningful change and ensure that diverse perspectives and resources contribute to gender equality.
- Conducting a situation assessment to identify development gaps and needs related to gender inequality is essential. By setting priorities at the local government and district levels, we can formulate targeted SDG-wise planning that addresses specific gender issues. Aligning existing budgets, schemes, and programs with relevant SDG 5 targets will further enhance our efforts to achieve gender equality in our state.



ABOUT

STEMROBO TECHNOLOGIES



STEMROBO provides 'End-To-End Solution to K-12 Schools' for 'Nurturing Innovation & 21st Century Skills' among young students of age 6-18 years across the globe. We offer young students an opportunity to explore, experience and bring innovation through a world class STEAM, Artificial Intelligence, Robotics & Coding curriculum integrated with our unique & affordable 'Technology Products and Solutions' delivered in an online or hybrid model; thereby enabling and empowering students to be able to become Creative - Thinkers and Problem - Solvers. Together, let's unlock the potential within each student, ignite a passion for Innovation, Creativity & Learning, and pave the way for a brighter tomorrow.

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.



STEMROBO TECHNOLOGIES

Innovation, Creativity & Learning

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Together, let's unlock the potential within each student, ignite a passion for Innovation, Creativity & Learning, and pave the way for a brighter tomorrow.

www.stemrobo.com

Mission

Our mission is to build an ecosystem focused on leveraging technology in education where **STEAM, Robotics, Coding, Artificial Intelligence & AR/VR** are utilized as crucial tools for kids to become smart in their academics and be able to solve modern world problems.

Vision

The company's vision is to nurture innovation and 21st century skills in K-12 students across the globe and prepare them for the future technological world. We are on a journey which will help every student to elevate core skills like **Logical Thinking, Creativity, Computational Thinking and Problem - Solving**.



About

SCHOOL STEAM LAB



The Steam 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 Steam 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.

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GLIMPSE OF ACTIVITIES

Grade I

- Students explored the fundamentals of mechanical design using the Fun Linker Kit. They learned about various mechanical components and how to assemble them creatively to achieve innovative outcomes.

Activities:

- **Sun Dial:** A functional model demonstrating the concept of time measurement using sunlight.
- **Pyramid:** A geometric structure showcasing stability and symmetry in design.
- **Factory:** A creative representation of an industrial setup, combining multiple components.



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**FUN
FACT**

Bridging the Digital Divide: About 37% of the world's population still lacks internet access—improving this can transform economies.

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GLIMPSE OF ACTIVITIES

Grade II

- Students explored the fundamentals of mechanical design using the Fun Linker Kit. They learned about various mechanical components and how to assemble them creatively to achieve innovative outcomes.

Activities:

- **Sun Dial:** A functional model demonstrating the concept of time measurement using sunlight.
- **Pyramid:** A geometric structure showcasing stability and symmetry in design.
- **Factory:** A creative representation of an industrial setup, combining multiple components.



Over 1,000 smart city projects are underway worldwide, focusing on efficient infrastructure, green energy, and innovative urban planning.

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GLIMPSE OF ACTIVITIES

Grade III

The Micro-bit is a small programmable device designed to make learning coding and electronics fun and accessible. Paired with the Microsoft MakeCode platform, students can easily program the Micro-bit using a simple block-based coding interface. This combination provides a hands-on introduction to programming and creative problem-solving.

Activities:

- **Display Icons:** Students learn to program the Micro-bit to display fun and creative icons, such as hearts or smiley faces, using its built-in LED matrix.
- **Counter:** By programming a counter, students understand how to use loops and variables to create a digital counting tool on the Micro:bit.



Switzerland, Sweden, and the United States are among the top countries in innovation, inspiring technological progress globally.

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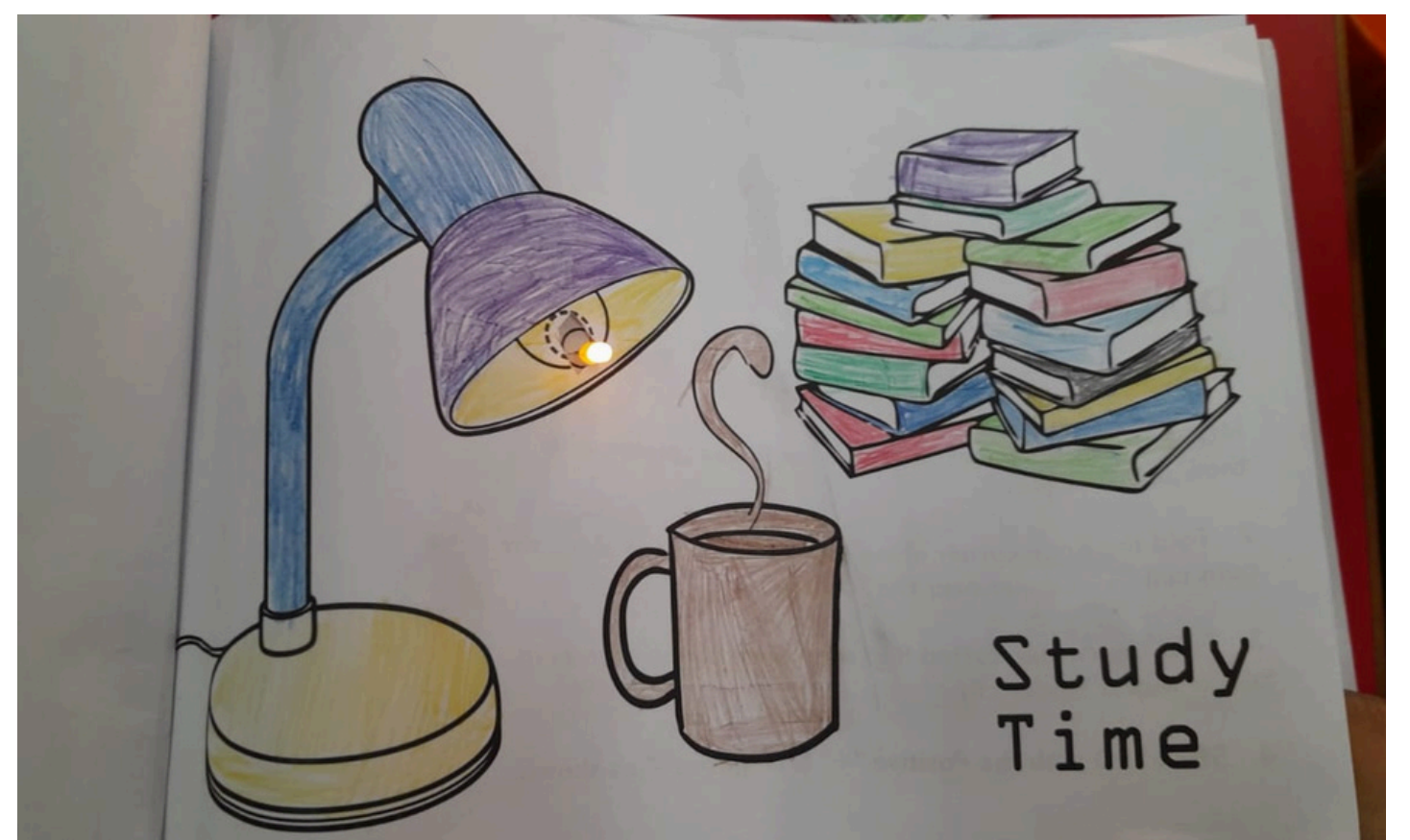
GLIMPSE OF ACTIVITIES

Grade IV

The Paper Circuit Kit provides an engaging way for students to explore the basics of electronics through creative and hands-on activities. By combining simple materials like paper, conductive tape, LEDs, and batteries, students learn about circuits in an approachable and fun manner.

Activities:

- **Study Time:** Create a small, functional lamp to simulate a study light, helping students understand how a basic circuit powers an LED.
- **Light Bulb:** Build a paper circuit that mimics a light bulb's functionality, teaching students about the flow of electricity and how to complete a circuit.
- **Robot:** Design a fun robot outline with LEDs that light up, introducing the concept of parallel circuits and creative electronics design.



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GLIMPSE OF ACTIVITIES

Grade V

The Paper Circuit Kit and Micro:bit provide an engaging introduction to electronics and programming, combining creativity and technology for hands-on learning.

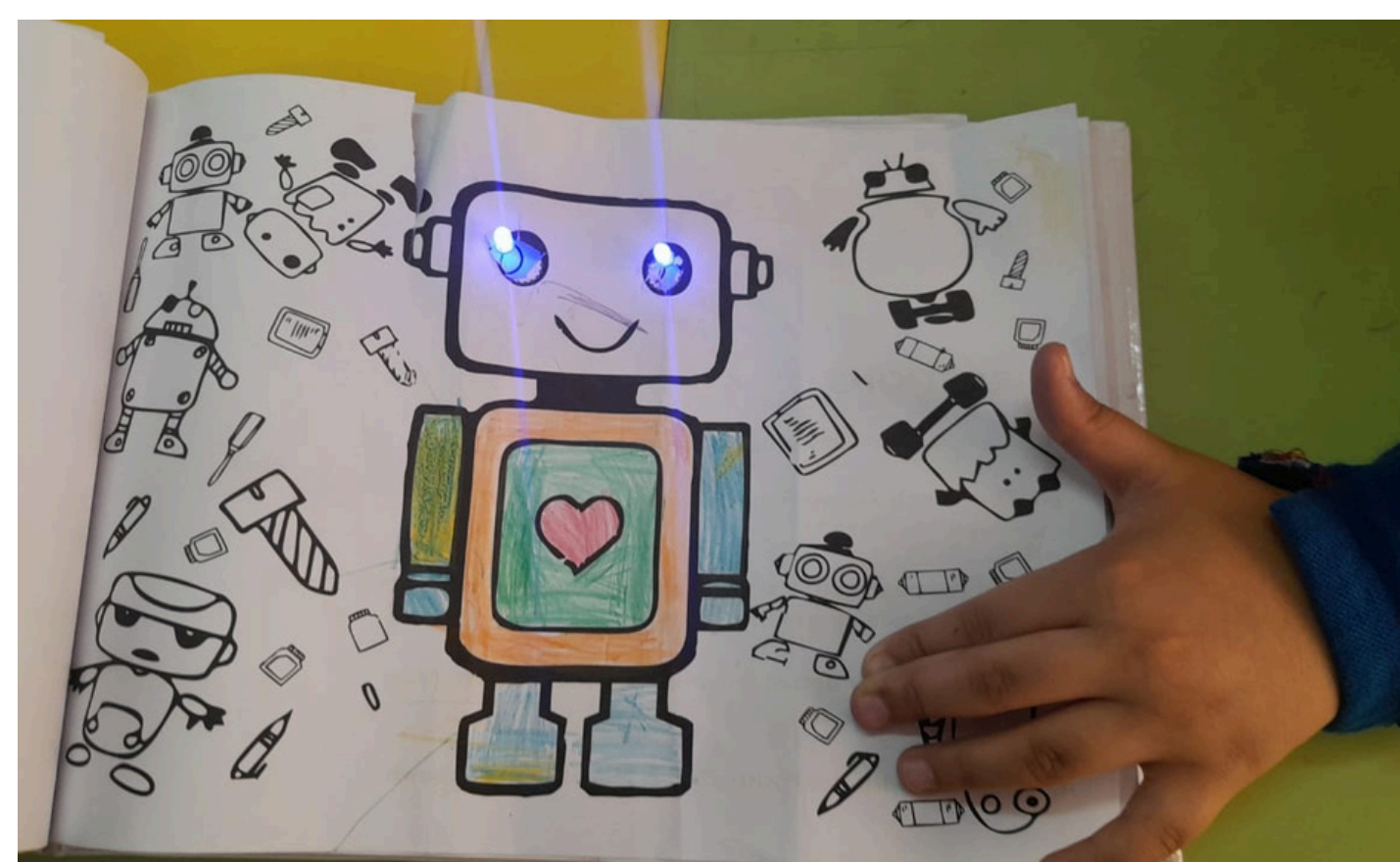
Activities:

- **Paper Circuit Kit:**

- **Study Time:** Design a simple study lamp using conductive tape and LEDs, learning circuit basics.
- **Light Bulb:** Create a circuit to simulate a light bulb, understanding electrical connections.
- **Robot:** Build a robot-themed circuit with glowing LEDs, blending creativity with electronics.

- **Micro:bit:**

- **Display Icons:** Program the LED matrix to show icons like hearts or smiley faces, introducing block-based coding.
- **Counter:** Code the Micro:bit to function as a counter, exploring loops and variables.



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Hydrogen-based steel production could cut carbon emissions by 90%, a game-changer for one of the most polluting industries.

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GLIMPSE OF ACTIVITIES

Grade VI

The Basic Electronics Kit and Micro:bit offer an engaging way for students to learn fundamental electronics and coding through hands-on activities.

Basic Electronics Kit Activities:

- **LED Control:** Learn how to connect and power an LED on a breadboard using components such as resistors and voltage regulators.
- **LED Control Using Switch:** Create a circuit where a switch controls the LED, teaching input and output concepts in electronics.

Micro:bit Activity:

- **Name Badge:** Program the Micro:bit to display a custom name badge on its LED matrix, allowing students to practice coding while creating a practical and fun project.



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By 2030, it's predicted that 3D printing could reduce manufacturing waste by 90%, revolutionizing industries and making them more sustainable.

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GLIMPSE OF ACTIVITIES

Grade VII

Introduction to Basic Electronics Kit and Micro:bit

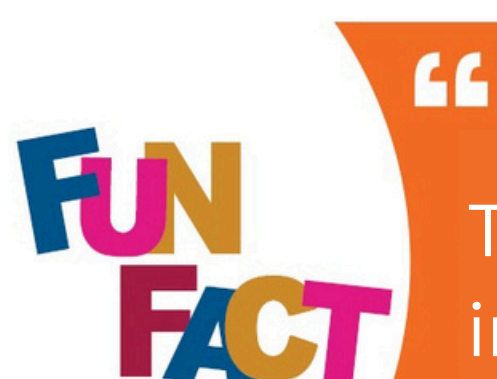
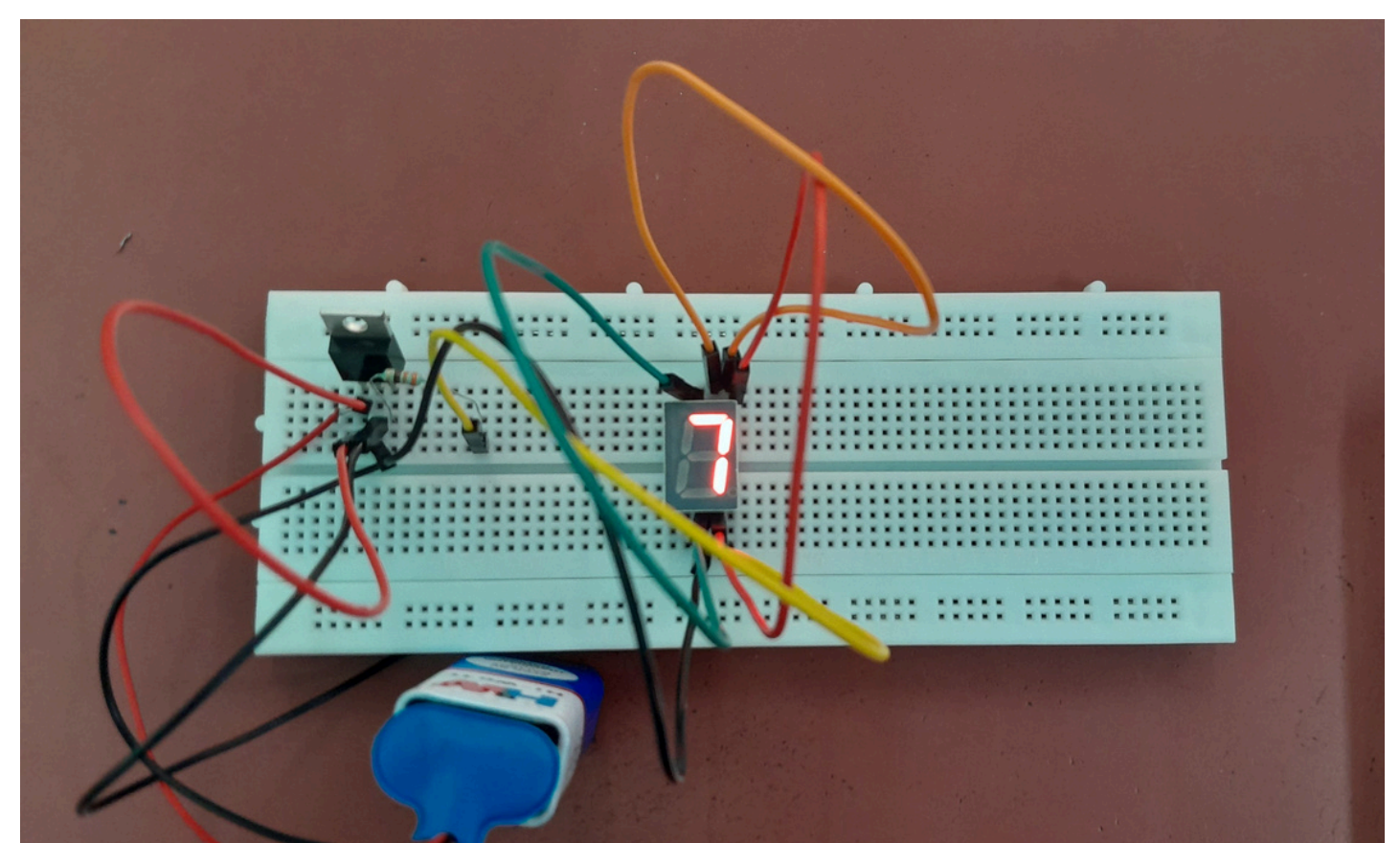
The Basic Electronics Kit and Micro:bit provide an engaging way for students to learn essential electronics and coding through hands-on activities.

Basic Electronics Kit Activities:

- **LED Control:** Learn how to connect and power an LED on a breadboard using basic components like resistors and voltage regulators.
- **Print Favorite Number on Seven Segment Display:** Use the seven-segment display to show a number, teaching students about circuit connections and how to program displays.

Micro:bit Activity:

- **Name Badge:** Program the Micro:bit to display a custom name badge on its LED matrix, giving students a chance to apply coding skills to a fun, creative project.



The Netherlands has fully wind-powered railways, showing how innovation in energy and transportation can go hand in hand.

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GLIMPSE OF ACTIVITIES

Grade VIII

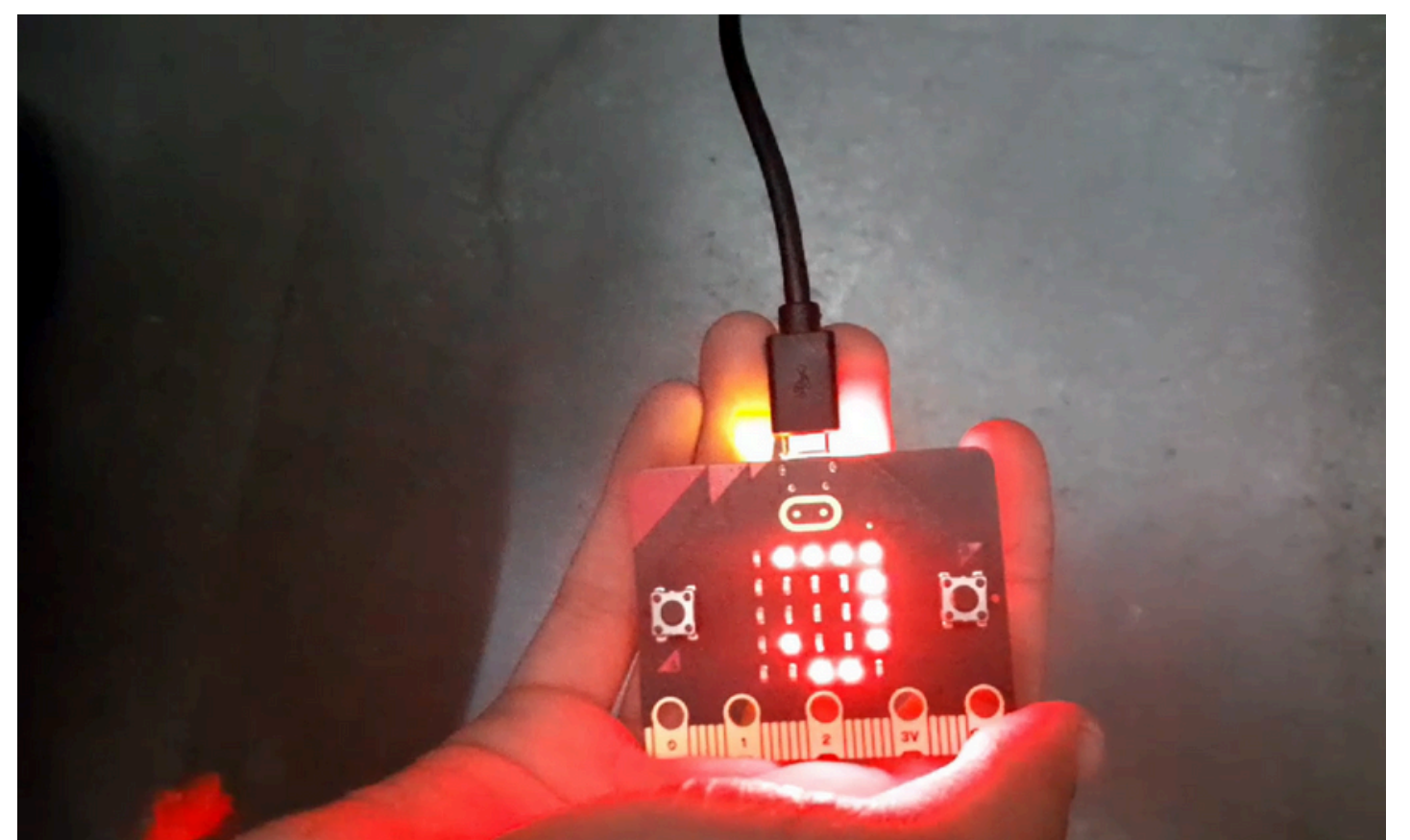
The Basic Electronics Kit and Micro:bit offer an engaging way for students to learn essential electronics and coding through hands-on activities.

Basic Electronics Kit Activities:

- **LED Glow:** Learn how to make an LED glow using a simple circuit setup on a breadboard with basic components like resistors and voltage regulators.
- **LED Control Using Switch:** Create a circuit where a switch controls the LED, teaching students the concept of input and output in electronics.

Micro:bit Activity:

- **Name Badge:** Program the Micro:bit to display a custom name badge on its LED matrix, allowing students to practice coding while creating a practical and fun project.



The Solar Impulse 2 flew around the world using only solar energy, proving sustainable air travel is possible!

— GLIMPSE OF — PROJECTS

Project name - Emergency Switch



Solution: The Emergency Switch (Clap Switch) is a sound-activated system designed for safety and convenience, especially for senior citizens. It uses a microphone sensor to detect claps, triggering a circuit to turn on a light. This eliminates the need to find switches at night, ensuring ease of use and safety. The project also introduces students to sound-based automation and basic electronics.

Impact: The Emergency Switch (Clap Switch) provides a vital solution for senior citizens at night, ensuring safety and convenience. By activating lights with a simple clap, it eliminates the need to search for switches in the dark, reducing the risk of falls and accidents. This innovation empowers independence, enhances comfort, and promotes a secure environment for nighttime mobility.

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Over 1.4 billion workers are in vulnerable employment. SDG 8 focuses on safe and fair working environments.



—ACHIEVEMENTS— AT A GLANCE

- We have completed 60% of our robotics curriculum, keeping students engaged and excited throughout the process.
- Beyond the curriculum, we've introduced activities that spark curiosity and enhance technical understanding, laying a strong foundation for future careers.
- Our focus is on building a solid base in robotics, with plans to introduce advanced concepts like AI and automation in the coming months.
- Kits like Linker Connectors/Block Kits, Micro:bit, Mechatron, Electronics Basic Kit, Tinker Orbit, Paper Circuits, and Smart Circuits are boosting students' creativity, focus, and technical skills in electronics and programming.
- These hands-on tools and activities equip students with essential skills, preparing them to become innovators and stay ahead in the world of technology.



Smart Cities: By 2030, over 70% of people will live in cities, increasing the need for smart infrastructure.



THANK YOU



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