THE BULLETEEN

OMNIBUS

SPECIAL EDITION: JULY 2025

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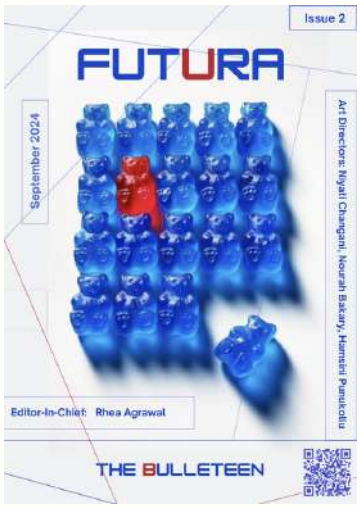

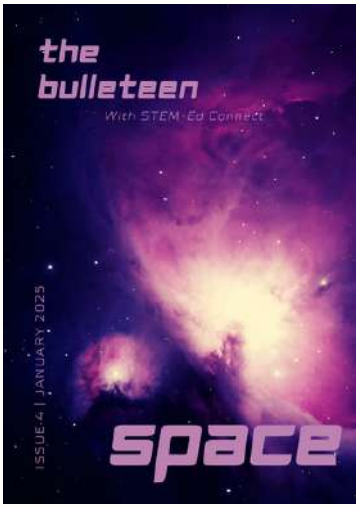

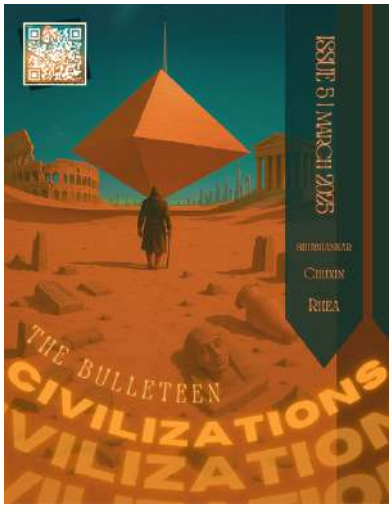

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In This ISSUE

From the Editor's Desk

Dear Readers,

Science is often imagined as a domain of equations, labs, and distant discoveries—but at its heart, it is something more human, more universal. STEM is for the curious, the determined, the dreamers. It is, in its purest form, for everyone.

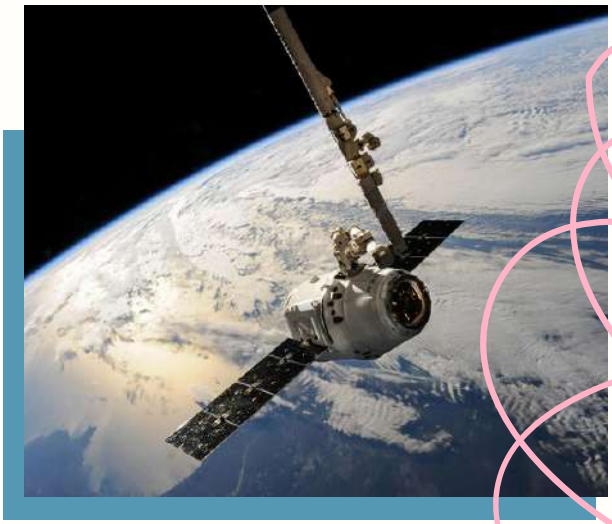
Imagine STEM not as a fortress but as a field—wide, open, and fertile with ideas. Every mind that steps onto it brings new seeds to sow. Who are we to decide whose ideas can grow?

The Bulleteen's "Omnibus" celebrates this very essence of STEM with articles carefully crafted by students of Chatrabhuj Narsee School. This work is a testament to the high standard of meticulous attention to detail and understanding that has always been imparted to us. With this issue, we aim to not only set a higher standard of STEM for everyone to understand and take away from, but also get to know ourselves from a deeper perspective. This month, we amplify voices and open the gates wider. STEM is a community, and its doors are wide open. So welcome in. There's room for you here.

Warmly,
Rhea Agrawal,
Editor-in-Chief, The Bulleteen

A BEGINNER'S GUIDE TO STEM

By Sanika Rane



Have you ever wondered how your phone works? Has the way water reaches your home ever crossed your mind? Believe it or not, it's all connected to a concept called 'STEM'.

Let's break it down to understand it better. The 'S' stands for science, which relates to coming up with scientific hypotheses and discovering theories that help improve the world in various aspects, particularly with a focus on science. The 'T' stands for technology, which refers to the use of tools, machines, and software to learn about the programming of material objects and to delve deeper into their algorithms. The letters 'E' and 'M' represent engineering and math. Their roles are to build and fix things and solve problems, count, and measure, respectively.

You may not realise it, but STEM is all around you! Let's say, when you are in a supermarket buying items, and you receive change, the vendor uses the math part of STEM to calculate it and then hands it over.

Thinking over how plants grow with just sunlight, carbon dioxide, and water is a chemical reaction involving science. Whether you are helping out with regular chores or just solving a problem in school, you are using and exploring STEM!

STEM.

STEM is considered to be a very integral part of our lives as it influences our decisions every day. It helps us think clearly and find smart and effective ways to fix things. STEM skills are used in multiple professions, varying from electricians, doctors, nurses, to mechanics, software engineers, and teachers. STEM is about learning how the world works, and asking questions and exploring these fields makes it more creative and exciting. What makes learning STEM incredibly easy is the fact that you don't need fancy tools or equipment to learn it. It is as simple as counting money, measuring rice or watching how a plant grows. An added benefit would be the way you build confidence within yourself as you learn to experiment, discover and solve real-life issues.

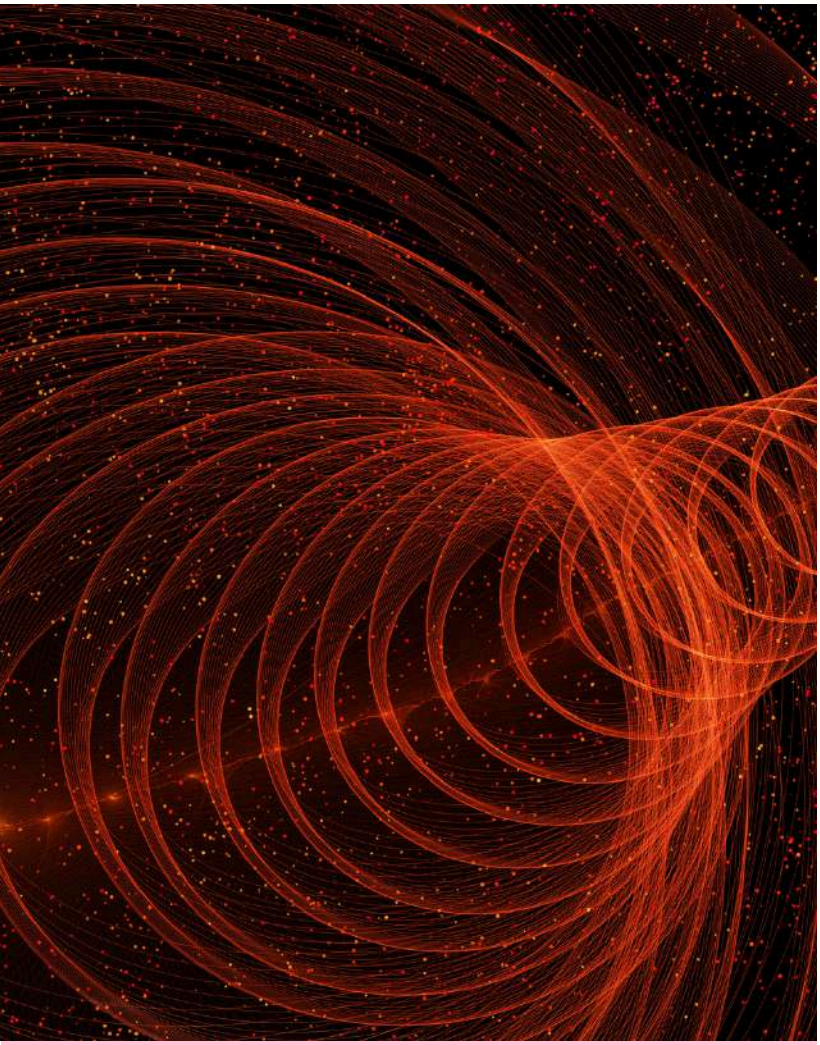
To reiterate, STEM is not something that is only taught in big fancy classrooms or fancy labs. It's a big idea that surrounds us. Anyone can explore STEM by simply being curious about how things function. You don't require a perfect background or expensive books to start your journey. All you need is to stay curious and not be afraid to ask questions. A small idea can lead to something amazing. You never know what you may discover!

Briliant Not Broken

By Hiya Singal

WHY NEURODIVERGENT THINKERS ARE MORE IMPORTANT THAN WE THINK

It was 1921, and the EINSTEIN CRAZE had only just begun. His groundbreaking concepts of general relativity and the photoelectric effect were getting around, reconceptualising modern physics. As his reputation built, another revelation was made. Einstein was a bit...different. He'd struggle in school, theorised based on solely what he called 'thought experiments', was 'hyper focused' where he would block out the world, immersing himself in a problem for days, along with other traits which were just... unusual.



People just brushed this off as him being a brilliant oddball, quirks of an exceptional scientist, if I may. Fast-forward decades, as modern scientists contemplate and dig deeper into these unique traits of Einstein and conclude he was almost certainly neurodivergent, particularly with ADHD or autism spectrum. As the contemporary ideology of 'straight As equal brilliance' dominates the scientific and mathematical fields, one must wonder, was Einstein a one in a million neurodivergent thinker, or is it exactly that, his unique tendencies, which helped him create the legacy he has?

The obvious question here is, how does neurodivergence help one in STEM? Well, let me help you understand. Neurodivergent thinkers think outside the box. They approach problems differently from neurotypical people, fostering innovation and practical workarounds. And that's EXACTLY what STEM is about! For instance, let's take a look at Temple Grandin, an autistic scientist, who revolutionised livestock facility design by visualising what animals saw — something neurotypical engineers missed.

She is now the author of more than 60 scientific papers on animal behaviour. What a GRAND feat! Moreover, ADHD prompts hyperfocus, allowing thinkers to ponder over problems for long, uninterrupted hours—a HUGE advantage to those theorising and researching. Without this, Einstein would have most definitely had trouble cracking relativity, setting us back almost an entire generation! The mathematical field is somewhere where these minds tend to shine. With the ability to spot patterns and inconsistencies, they excel in programming and engineering. Finally, let's talk about how neurodivergent minds experience the world a bit differently. They may be hypersensitive to sound, colour, and light, and this may just lead them to further redesign human-computer interaction, acoustics, and environmental engineering.

The only way to progress, whether it be in life or more relevantly, STEM, is to question all we have done up till now, and do what we are just a little bit differently. Let's change the narrative, steer it to where we harness our utmost potential. The 'right' way isn't the *only* way. After all, STEM doesn't need straight A's; it needs newer ways of thinking.

Bacteria: The Good, the Bad and the Ugly

By Kinara Goyal

What do you think when you hear the word bacteria? Infections. Pneumonia. Death. In spite of their reputation, bacteria play a necessary role in the human body.

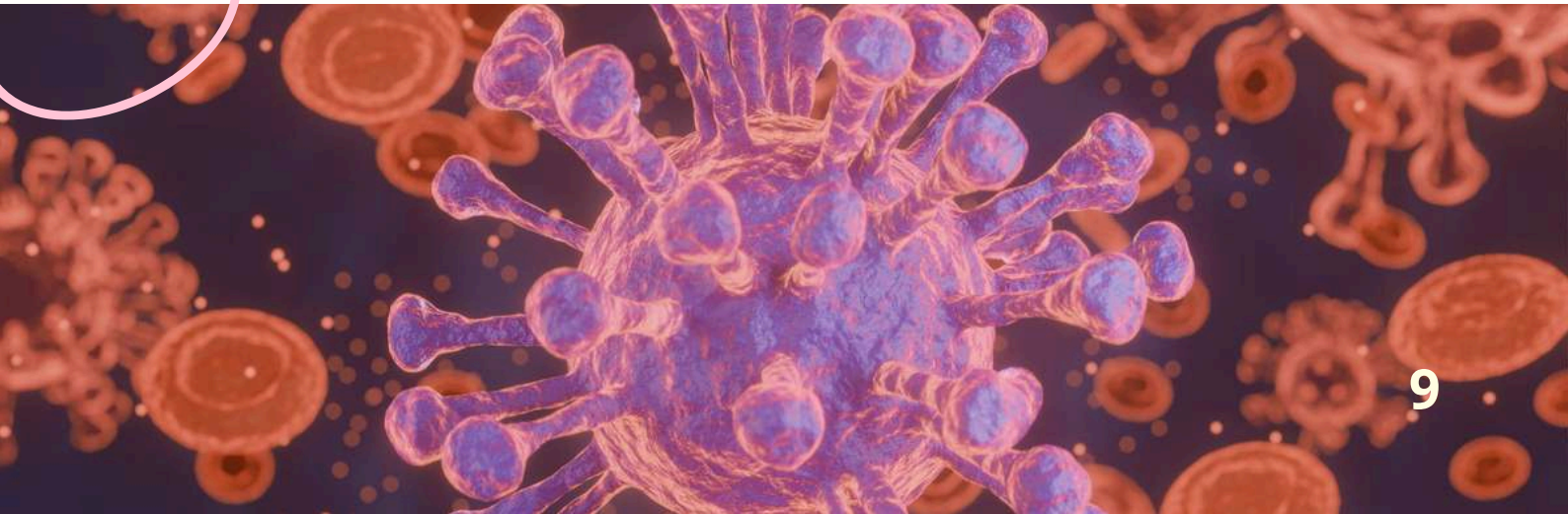
Our body is host to over a thousand types of bacteria. One of the largest microbiomes for bacteria is in the gut. Bacteria, like Lacto bacillus, that reside in our colon are needed to digest complex sugars and fibres, while others, like Bacteroides, help maintain the internal body temperature.

Recent research shows connection between Parkinson's disease and gut bacteria imbalance. However, gut bacteria were not taken seriously until the late twentieth century. In the early nineteen hundreds, pneumonia and tuberculosis were leading causes of death. This dangerous pairing made bacteria 'the enemy' in the early and mid-twentieth century. So, Alexander Fleming's discovery of penicillin, an antibiotic which could fight pneumonia, was a godsend. This was followed by a rapid succession of discoveries of antibiotics.

Then, how is it that, today, one in eight deaths is still caused by bacteria?

Firstly, antibiotics are still inaccessible in some parts of the world. The indiscriminate and improper use of antibiotics has also led to the evolution of drug-resistant strains of bacteria called superbugs. These superbugs can only be eliminated by poisons similar to those used in chemotherapy.

In conclusion, while some bacteria are an integral part of our body, others are lethal. Therefore, we must protect resident bacteria and eliminate infiltrators by using antibiotics responsibly.



A CREATIVE APPROACH TO STEM: INTRODUCING STEAM

By Sammaira Nagar

STEM stands for science, technology, engineering and mathematics. This is a very technical approach to things and is needed in our lives. It is of vital importance to include this in our schools or even at home when learning something new. STEM is what will take us to the next level. But integrating art and blending these 5 fields is what we should be doing to move further ahead in the long run.

Imagine uniting logic, creativity, new ideas, etc. That's called innovative thinking. Including art will not only give you a chance to develop flexible ideas better, but also apply theories and bring your innovative ideas to life. For some students, STEM is something that they're not interested in, but adding an artistic approach could potentially appeal to this crowd. Visual arts, or even performing a demonstration about a certain topic, are way more interesting than a regular PowerPoint presentation.

Thinking creatively allows for better collaboration and leads to discoveries and unique approaches to problem-solving. Most experts say that STEM is an essential part of this century's education. And it is. But we have to think about the next century too. Which is why including art in STEM and making it STEAM (Science, Technology, Engineering, Art and mathematics) is so important. Shortly, there are going to be many careers related to AI and many technical jobs, but it'll prepare students for a wide range of careers that need a problem-solving, collaborative and critical approach. Some Indian schools have already started incorporating STEAM. However great it may be, there are still some issues with accessibility around the world and especially in rural areas.

Including STEAM has many benefits, but implementing and applying it proves to be difficult, as there are some big issues. Firstly, many teachers don't have the required training to provide knowledge about STEAM.

In most curricula, adding STEAM doesn't match all the assessments or the timeline of the existing lesson plans. This has started being taken care of, and there are professionals who are trying to make this easier. This is why we can say that in the future, most schools will have implemented this type of learning.

By Sanika Rane

The Magic Of STEM: 3 Experiments to Try at Home

To learn how the world works through science, you don't need fancy equipment or even a lab. To get going, you will need to grab some basic household materials.

1 DIY Lava Lamp

You need:

A clear glass or even a plastic clear bottle will work
Cooking oil
Water
Food colouring
A fizzy tablet (ENO or vitamin C)

Steps:

1. Fill the bottle 3/4th with oil
2. Add some water
3. Drop in food colouring
4. Add that fizzy tablet and watch bubbles form in a colourful mixture!

Science behind it:

Water and oil don't mix, and the fizzy tablet creates bubbles that make the coloured water float.

2 Rainbow in a Glass

You need:

4 cups
Sugar
Water
Food colouring
A spoon

Steps:

1. Add different amounts of sugar to each cup of water.
2. Add different colours.
3. Slowly pour one colour at a time into a glass, starting with the heaviest (most sugar).

The science behind it:

Heavier liquids stay at the bottom, and lighter ones float, creating cool rainbow layers!

3 A balloon that blows itself up!

You need:

A balloon
A plastic bottle
Vinegar
Baking soda
A funnel (you can make a cone out of paper)

Steps:

1. Pour vinegar into the bottle
2. Add baking soda into the balloon
3. Fit the balloon onto the bottle
4. Let the soda drop in and watch the balloon inflate!

The science behind it:

Vinegar and baking soda together make carbon dioxide, which fills the balloon.

Gravity
The Invisible Pull

By Madhurya Mahidhara

Have you ever wondered why you fall back down when you jump? Or why does a ball always come down when you throw it in the air? Well, this all happens because of an invisible force that pulls everything towards the ground. This force is called gravity.

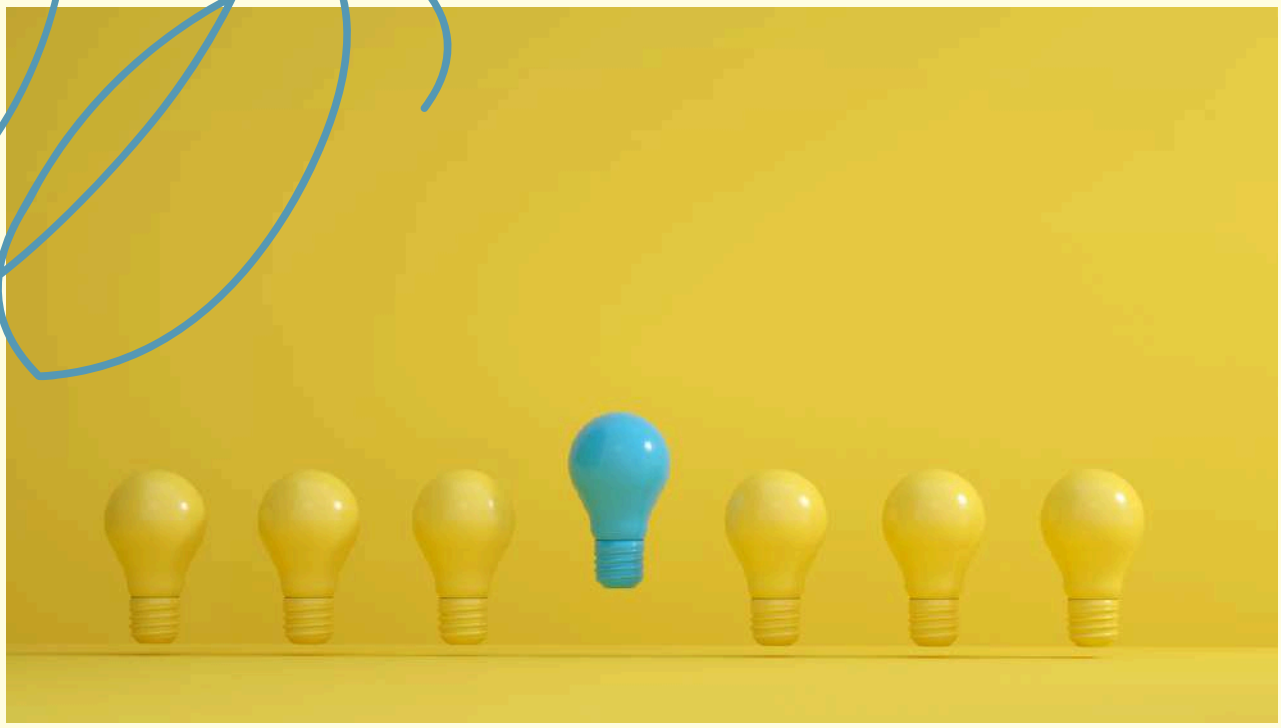
Gravity is the force that attracts objects with mass towards each other. It is important because gravity holds the universe together, keeps our atmosphere around the Earth, and gives objects weight. Gravity can even affect time by time dilation, meaning time moves more slowly in places with stronger gravity. Although gravity is the weakest of the four fundamental forces in nature, it is still the most important force in the universe. Two factors affect gravity: mass and distance. Newton's law of universal gravitation says that the force of gravity is directly related to the product of the masses involved and inversely related to the square of the distance between their centres. In simple words, gravity gets stronger when the objects are heavier and weaker when the objects are farther apart. That's why the Earth pulls us strongly towards it, but small objects don't.

Gravity is different on other planets because of different masses and sizes. If two planets have the same mass but different sizes, the one with the smaller size will have stronger gravity! Even though we can't see it, the force of gravity shapes everything around us. Without gravity, the whole universe would fall apart. So the next time you jump, be sure to thank gravity for stopping you from floating away!

TECH THAT LEVELS PLAYING FIELDS

By Hiya Singal

Let me paint you a picture: a man, aged 21, diagnosed with ALS—a disease leading to difficulty speaking, swallowing, and eventually breathing—said to have only a few years left to live, aspires to be one of the greatest minds in STEM. Unsurprisingly, many declared his career DOA, writing him off as hopeless. Flash forward a decade—this man, expected to quietly fade into in the background, takes the world by storm with his groundbreaking theories of black holes and the Hawking radiation. Stephen Hawking, a legend, rewrote all we ever conceived of the world and beyond. Reshaping what society thought of him and those like, Hawking defeated the odds, unknowingly making space for further generations in STEM. So, this inevitably has me wondering—is the ideal scientist it, or do we have space, mentally and technologically, for differently abled scientists? Either-or, I think it's safe to say, some thinking is certainly overdue.



Now to the interesting part, what assistive tools do we have? Let's start with SGDs. Speech-Generating Devices (SGDs) are for those who have speech impairments, as Hawking famously did. These can be controlled differently, adapted according to the user's abilities. It can use eye movements, touch screen or, like Hawking, hand and cheek movements to control the cursor, select words and make coherent sentences. The device processes the input, may operate with predictive speech, and uses a speech synthesis engine to generate a natural-sounding voice. Screen readers, like JAWS, and VoiceOver, are helping the blind by converting on-screen text into speech, reading out complex equations and mathematical notation, simplifying all they have to do.

Real-time captioning helps the impaired hearing, making lectures and conferences accessible to all by transcribing speech. And this is just the overview. There is so much more available and in the making! Turns out being differently abled and in STEM isn't mutually exclusive!

Science, Technology, Engineering, and Mathematics, STEM, consists of the world's brightest minds. And more often than not, we expect those minds to be like us, physically. Enter Stephen Hawking, who revolutionised STEM for those who are differently abled, emphasising the good old "don't judge a book by its cover". In a world obsessed with fast-talking, lab-coat-wearing scientific geniuses, Hawking's slow, robotic voice rewrote the script — and left us speechless.

STEM Careers: Turning Curiosity into Real-World Jobs

By Suhaani Seth

Students paying attention during STEM classes, which stands for Science, Technology, Engineering, and Mathematics, evoke images of thick textbooks, white coats, or sophisticated equations. In reality, STEM serves as the foundation for countless stimulating careers which are interwoven with a person's daily life. Regardless of whether you live in an urban area or a rural village, the knowledge you acquire in STEM subjects can provide you with opportunities that you had never imagined before.

An example would be a biomedical engineer who blends biology and engineering by developing prosthetic limbs and other medical equipment. Numerous patients struggling with mobility, sight or respiratory functions have an easier life due to these people. Another example would be GIS (Geographic Information System) specialists. Their skills in mathematics and computers assist in building digital maps, which help drivers navigate efficiently. Farmers use such maps to track the health of crops.

In order to identify trends and improve decision-making, data analysts sort through vast amounts of data, such as weather records, sports scores, or even grocery store sales. A single astute observation from a data analyst can help a city prevent water shortages or save a company millions of rupees. Not all STEM careers necessitate a costly college degree. Expert auto mechanics use physics to diagnose vehicles, while agri-tech entrepreneurs create inexpensive sensors that alert small-scale farmers when their crops require water.

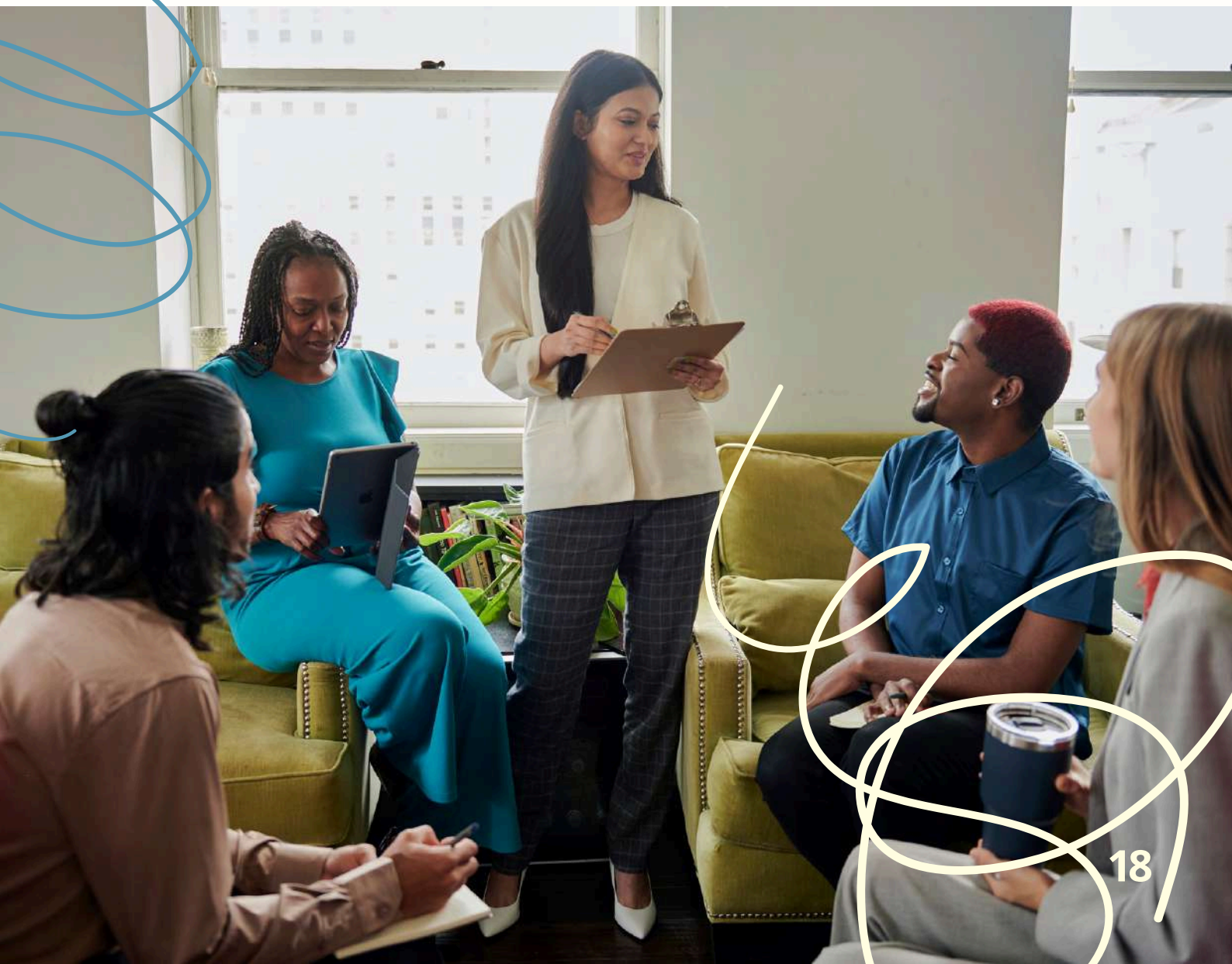
How do you get ready for these kinds of jobs?

1. Maintain your curiosity: Whenever you see a lightning storm, a bridge, or a smartphone, ask yourself "why" and "how."

2. Work on solving problems: Your STEM skills can be strengthened with easy at-home projects like coding a maze game or constructing a paper tower.

3. Look for mentors: Even with limited resources, you can get guidance from teachers, nearby experts, or free online courses.

Keep in mind that STEM is a toolkit for bettering lives, not just a subject taught in the classroom. Someone reading this article today might be the one to make the next big discovery, whether it's a medical miracle or a solution to the climate crisis. Why don't you?

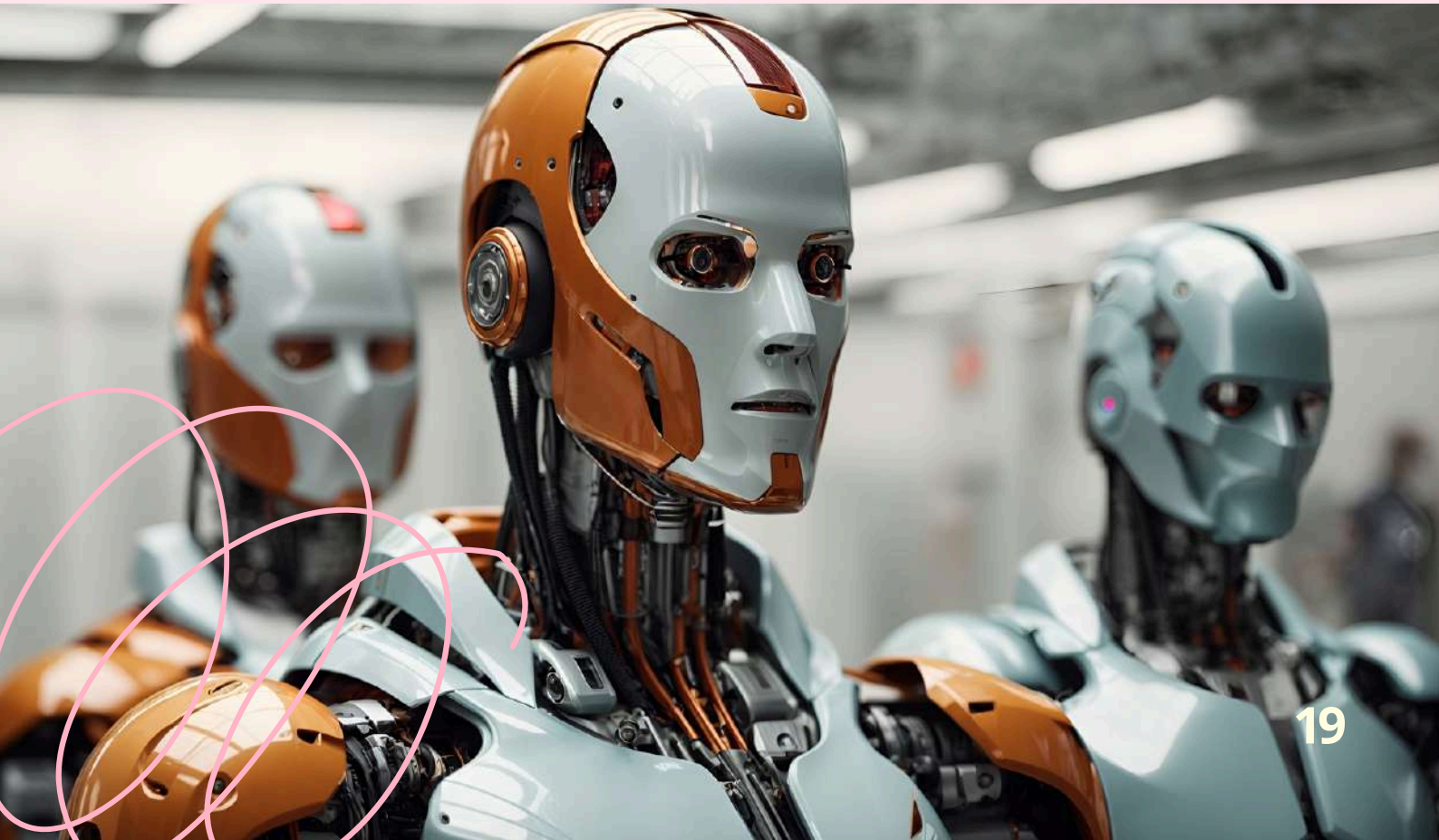


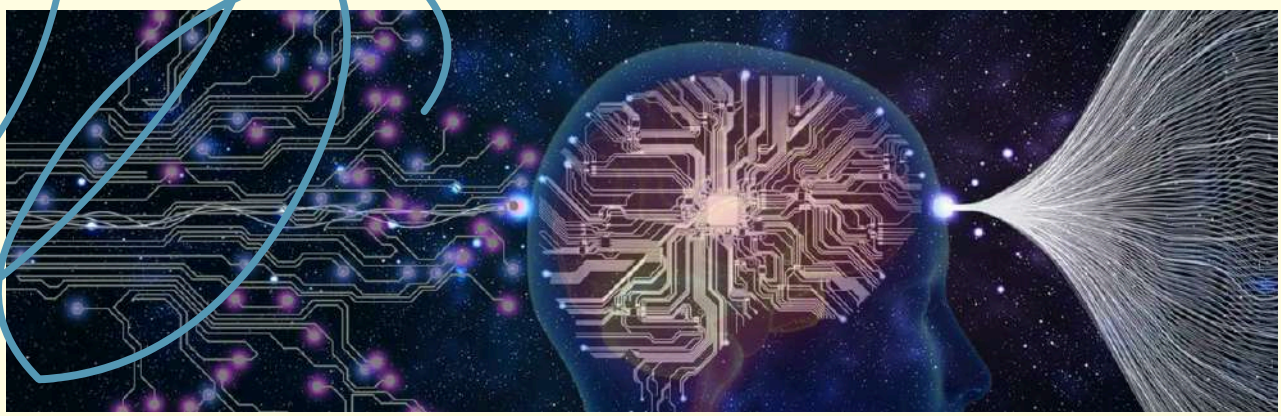
ROBOTS: HELP OR HINDRANCE?

By Nishika Chandarana

When one thinks of the word "robot", we usually think of a big, scary, human-like robot that can speak, run, and jump! There are many robots like this, which are known as humanoid robots. However, not all robots look like this. Some resemble animals, some are giant and heavy, and some are so small that you need a magnifying glass to see them! But what exactly is a robot? Are they a tremendous help to us humans, or will they ultimately turn out to be a hindrance?

Robots, by definition, are 'a type of automated machine that can execute specific tasks with little or no human intervention and with speed and precision'. A computer programs them to do tasks that are repetitive (such as a machine doing the same task in a factory) or nearly impossible for humans to achieve (exploring dangerous tunnels or performing complex surgeries quicker with faster recovery times). There are various degrees of autonomy in a robot, from performing one task over and





over to being able to make decisions on its own.

Robots are useful to us in numerous ways. They can perform tasks that are unsafe or unwanted to humans. They can work 24/7 without needing breaks, which improves workflow, saving a tremendous amount of time, and further aiding in supplying enough of a product to the market or a customer. They can carry chemicals and toxic waste that is dangerous for humans and operate in low-lighting or tight spaces, reducing the risk of accidents or injuries. Robotic aids like prosthetics and wheelchairs help disabled persons be independent and enhance mobility, while voice assistants can help those with visual or mobility challenges. Robots can also help with daily chores and monitor areas where human involvement is risky.

Although robots help us in so many ways, they can also be as much of a hindrance as a help. Robots replace humans in many tasks, leading to job displacement and economic hardship.

This also causes higher rates of unemployment, leading to a fall in the economy. They are not cheap, either. The initial cost of a robot can range from Rs 50,000 to Rs 15,00,000, along with installation charges and regular maintenance, which can cause downtime and productivity losses. As they are pre-programmed, they have limited creativity capabilities and therefore struggle with creative tasks or unexpected setbacks. Over-reliance on this technology can lead to loss of human skills and knowledge, along with increased vulnerability to cyber attacks and system failure. The electronic waste produced by robots is also a big environmental concern.

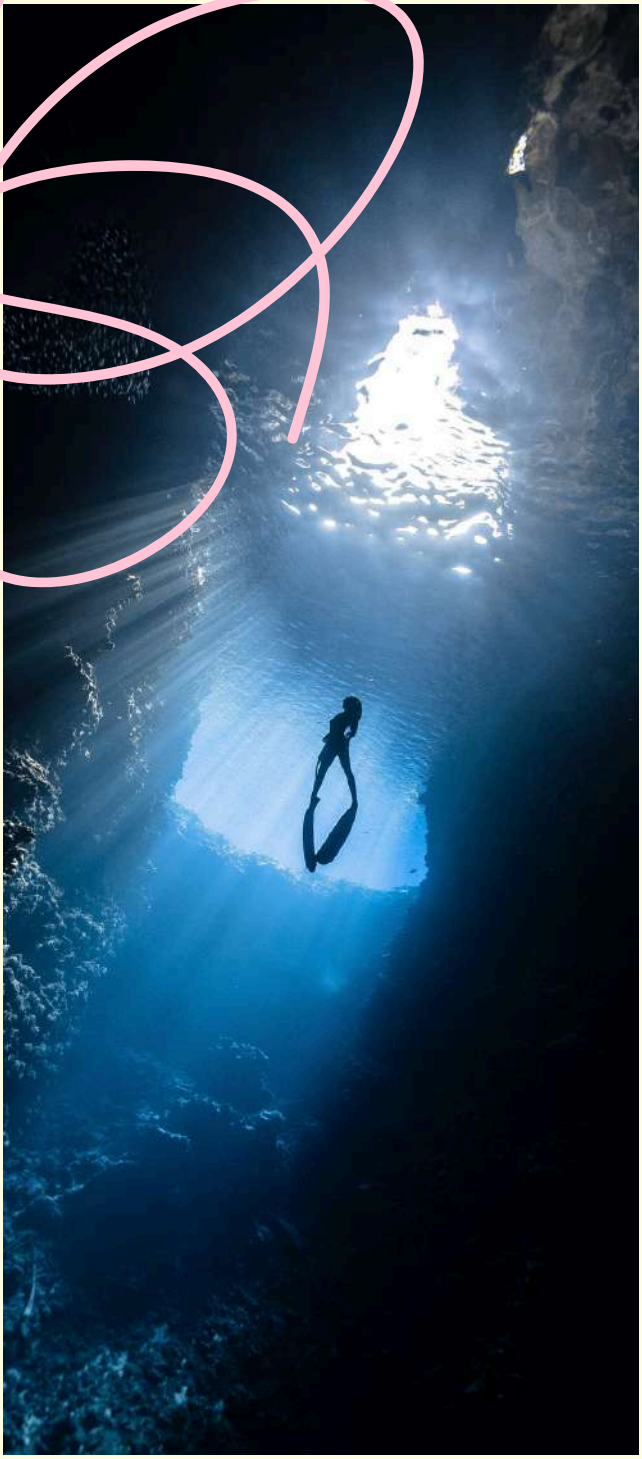
Moreover, robots, although they are a godsend in certain ways, can also negatively impact humans and the environment as a whole, which is why it is important to draw the line between assistance and over-reliance on them. One must acknowledge their importance, but at the same time, understand their risks and learn how to use new technology efficiently and intelligently.

Under-Water Wonders

By Ayana Jayakrishnan

When you look at the ocean, you might think that it is just water, but there is an entire world of strange animals and plants hidden below it. If you ever were to taste this water, it would be salty and tangy. This is because of a substance called sodium chloride, which is also what we use as salt when we eat our food. More than 70% of our Earth is covered with oceans. There are five main ones: Pacific, Atlantic, Indian, Southern, and Arctic. They are so large and deep that we haven't even explored most of them!

In the oceans, you will find animals that can glow in the dark! The glowing is known as bioluminescence, and it can help animals see in the dark, or even scare other animals away. The tiniest of all animals are the zooplankton; they are so tiny that you could probably fit 100 of them on the tip of a pencil. The largest animal in the world is the Blue Whale, and it lives in the ocean too. Oceans consist of many other animals like crabs, fish, jellyfish and dolphins. Some animals, like corals, look like plants but aren't.



Octopuses are animals that have 8 legs, and surprisingly, 3 hearts! They can even change colours to hide from other animals. Just like how this octopus is made to survive in the ocean, other animals have different abilities that make them interesting. There are also plants everywhere. These plants are really important because they make oxygen for us and other animals to breathe. They give us more than 50% of the oxygen on Earth!

The ocean is always moving with its waves, tides, and currents. When the wind blows across the surface, waves are produced. They can either be small or large. These tides are the rising and falling of the sea, caused by the Moon's gravitational pull on the water. Currents help transport warm and cold water all around the planet. This is important as it can keep changing the weather and create seasons as well as rain.

Oceans are full of life, and the way they work is so fascinating. But right now, they are in danger. Many of the sea creatures are losing their homes and lives because the water is too dirty or too hot. Many people throw a lot of plastic and other waste into the sea. It might not seem like much, but it can kill a lot of animals when they accidentally eat it or get stuck in it. If we do not take care of the ocean, most of the wonderful creatures will disappear! We must keep oceans safe and clean, because they give us air, water, and food. We can survive because of them, and we should protect them at all costs.

CYBER-SAFETY

What to take into consideration while being online?

By Avika Gupta

People use technology for watching videos, video-conferencing with family who live far away, talking to their friends via WhatsApp, playing online games, being updated on news, social media, etc. Although the use of technology can be extremely helpful, it also has some hazards.

You may get spam emails that contain viruses; these viruses can compromise data and damage the receiving device. A person or a group of people can scam you, causing financial losses. Someone can rudely comment on a social media post with the intent of cyber-bullying.

However, if you take basic precautions and are aware, you are at significantly minimal risk. While using technology, one should always remember some basics. Create firm passwords. Do not give out your passwords to anyone (not even your best friends). You should also make sure not to talk to strangers online (like in games) and give them any personal information like where you live or your contact number.

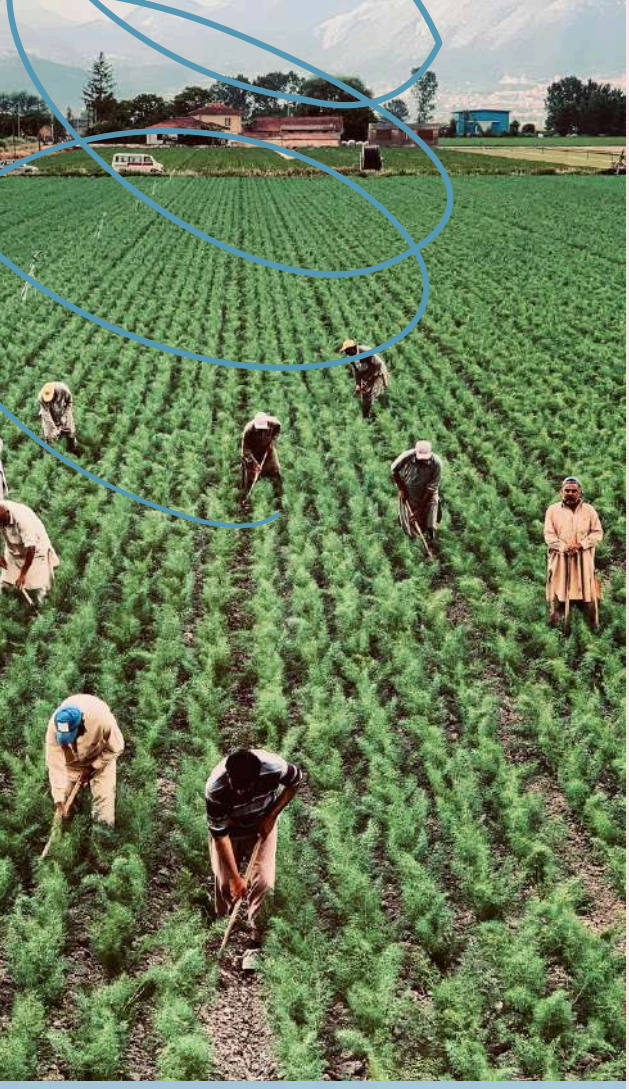
From increased productivity and worldwide connectivity, and personal growth, technology has many benefits. However, there are also many privacy violations, cyberattacks, physical and mental health issues, and stress. You can protect yourself through practices like strong passwords, secure networks and frequent backups. ***The objective is to use technology sensibly, not to shun it.***

STEM IN FARMING: HOW SCIENCE HELPS GROW OUR FOOD

By Suhaani Seth

Upon hearing the term STEM, which refers to science, technology, engineering, and mathematics, people often associate it with robots or even space travel. However, STEM can also assist with farming, an age-old and essential activity. Farmers today have sophisticated and efficient STEM tools at their disposal to aid in increasing crop production, saving time, and protecting the environment.

Let's start with science. Farmers analyse the soil and check if it possesses the nutrients required. They also study the amount of water, sunlight, and farming practices required to ensure each crop grows to its optimum potentialwhich enables them to grow healthier plants. Technology follows next. Weather apps are being used by some farmers for planting and harvesting. Other farmers utilise machines for watering crops and sowing seeds. Some areas even employ drones to take aerial photographs of fields. This enables them to identify areas that require water or other attention.



Engineering also comes into play in the form of tractors, irrigation systems, and simple tools. Farmers apply creative problem-solving to repair broken-down equipment or construct new tools from local materials.

Finally, the math. It is essential for farmers not only to measure their land, but also to calculate the seeds and produce they need to grow. It also assists in financing and budget planning.

Some villagers are learning to use innovative and cheap STEM water sensors made from recycled materials. These advanced technologies tell the farmers when the soil is dry, hence helping them save water.

STEM knowledge encourages students to get involved in their communities and assist their families. You can conduct mini farming research at home, growing plants and measuring sunlight, and documenting growth rate.

STEM is not only for scientists working in offices or labs; it is applicable in everyday life, in fields and farms where people cultivate food for our daily consumption.

As you enjoy your next serving of rice or any fruits and vegetables, do not forget that STEM was instrumental in putting that food on our table.

How are Buildings Built?

By Nishika Chandarana

Buildings and other structures are an integral part of our lives. We live, thrive and make many memories in them. They are essential to us for shelter from the natural elements and privacy. Most of them look simple, but building them is a whole other ballgame. So, how are they built, and is it easier or harder said than done?

Before building these structures, architects, engineers, and builders come together to design and plan how the building looks, its interior and its functionality. The architect conceptualises and designs the building's appearance. They create a blueprint of the building and oversee the construction to ensure it's going to plan.

Engineers provide structural expertise on the building's safety and stability, helping configure utilities such as plumbing and electricity, which is why they work closely with the architect. The builder ensures that, during planning, the plan doesn't exceed the budget and that resources aren't scarce. They then use the blueprint and make the plan a reality. When constructing a building, the process begins with clearing the site and levelling the ground for excavation. Soil is tested to assess its strength and suitability for construction.

The next step is laying the foundation, the backbone of the building—it serves as its base and bears its load. The foundation type is determined by the building's size and the soil's capabilities.

Then, the structure's skeleton is built using strong materials like steel, wood, or concrete. At this stage, the building takes its final shape, with load-bearing walls being a key component. After the skeleton is complete, key systems are installed within the framework. This phase requires careful planning and coordination, as installation can be complicated.

Then, the building undergoes roofing to shield it from the elements and enhance its structural integrity. In India, the construction of terraces is the norm, replacing traditional roofing.

Afterwards, the building's exterior undergoes finishing. Windows and doors are installed, and exterior finishes like plaster are added. The structure is weatherproofed and given a finish. This is when the structure starts looking like the buildings we see around us.

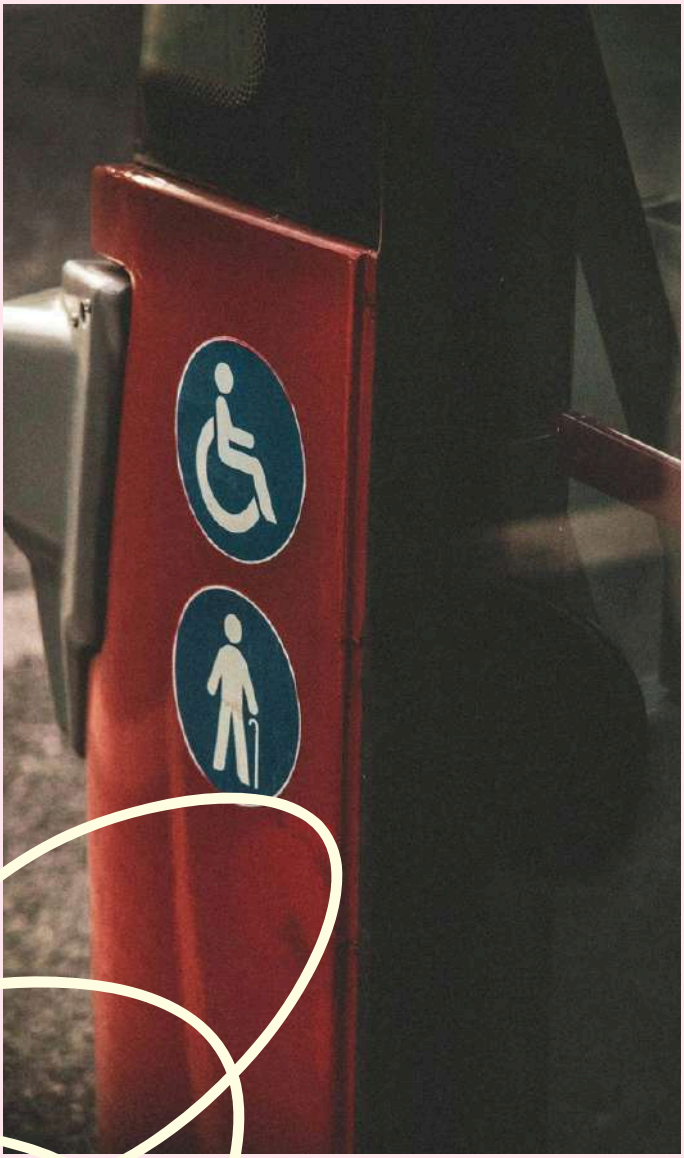
Interior finishing now takes place. This involves installing interior walls, flooring, fixtures (like cabinetry and doors), and applying finishes like paint and wallpaper.

Building a structure, though it sounds easy, involves careful planning, teamwork, technical expertise, and attention to detail at every stage. It is a lengthy process, from the first blueprint to the final coat of paint, and each step plays a vital role in creating safe, functional, and lasting spaces, where we thrive, live and smile.

Accessibility In STEM

By Vihaa Shah and Vedanshi Kalaria

Accessibility means making sure that everyone can grasp the knowledge, no matter their identities. In STEM, accessibility is the means of helping individuals in the fields of science and technology, whether physically disabled or from different races, genders, or cultural identities.

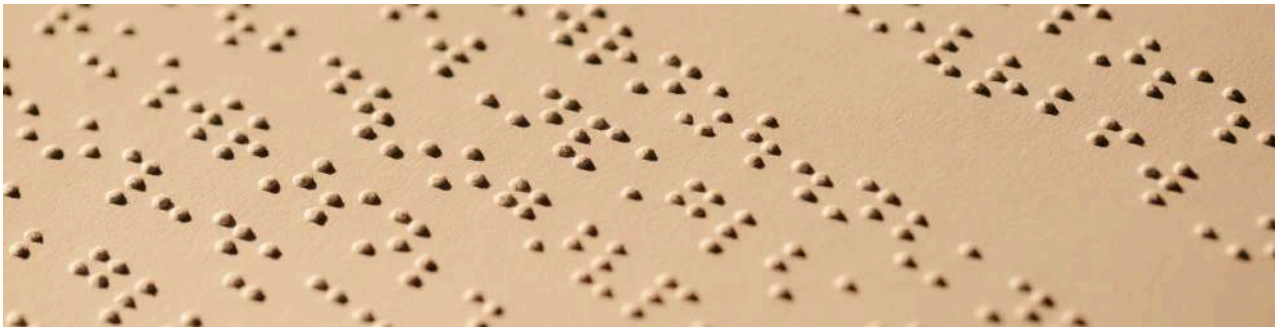


Why Accessibility in STEM is Important:

1. Unbiased Opportunity: Every human has a right to accomplish their dreams in learning and working in the field of STEM.

2. Better Ideas with Different Perspectives: When people come from diverse cultures to work, they bring new perspectives. This leads to better problem-solving and more efficient solutions.

3. High-Performing Teams: The modern age needs more scientists and tech experts. By making STEM more accessible, we help build a larger, smarter and efficient workforce.



Even today, many people face challenges in joining STEM. Some of these are:

·Disabilities People who face physical impairments may struggle with the usage of appliances, labs, and classrooms which are equipped with assistive products.
·Lack of Resources: Many institutes do not have good scientific labs or network access.
·Bias and Stereotypes: Some people are told they are not “intelligent enough” for science because of their gender, race, background or disabilities.
·Language Barriers: Scientific terms can be hard to understand, especially for people who speak a different language, especially if they have migrated from rural or other places or have learning difficulties like dyslexia or ADHD.

How We Can Make STEM More Accessible

1. Accessible Appliances: Usage of screen readers, captions, and special keyboards for those with disabilities.
2. Enhanced Instructors: Teachers can use simple language, visuals and interactive sessions to help everyone understand.
3. Additional Assistance: Scholarships, free online classes, and community programs can encourage students from rural areas or underrepresented groups to achieve their dreams.
4. Motivation: Show children that anyone can be a successful scientist and tech expert, no matter their background, gender, race, or disabilities

STEM is a building and growing aspect of the future, and everyone interested deserves a chance with it. By eliminating obstacles and supporting all learners, we can make STEM engaging for everyone. Let’s build a world where science belongs to everyone.

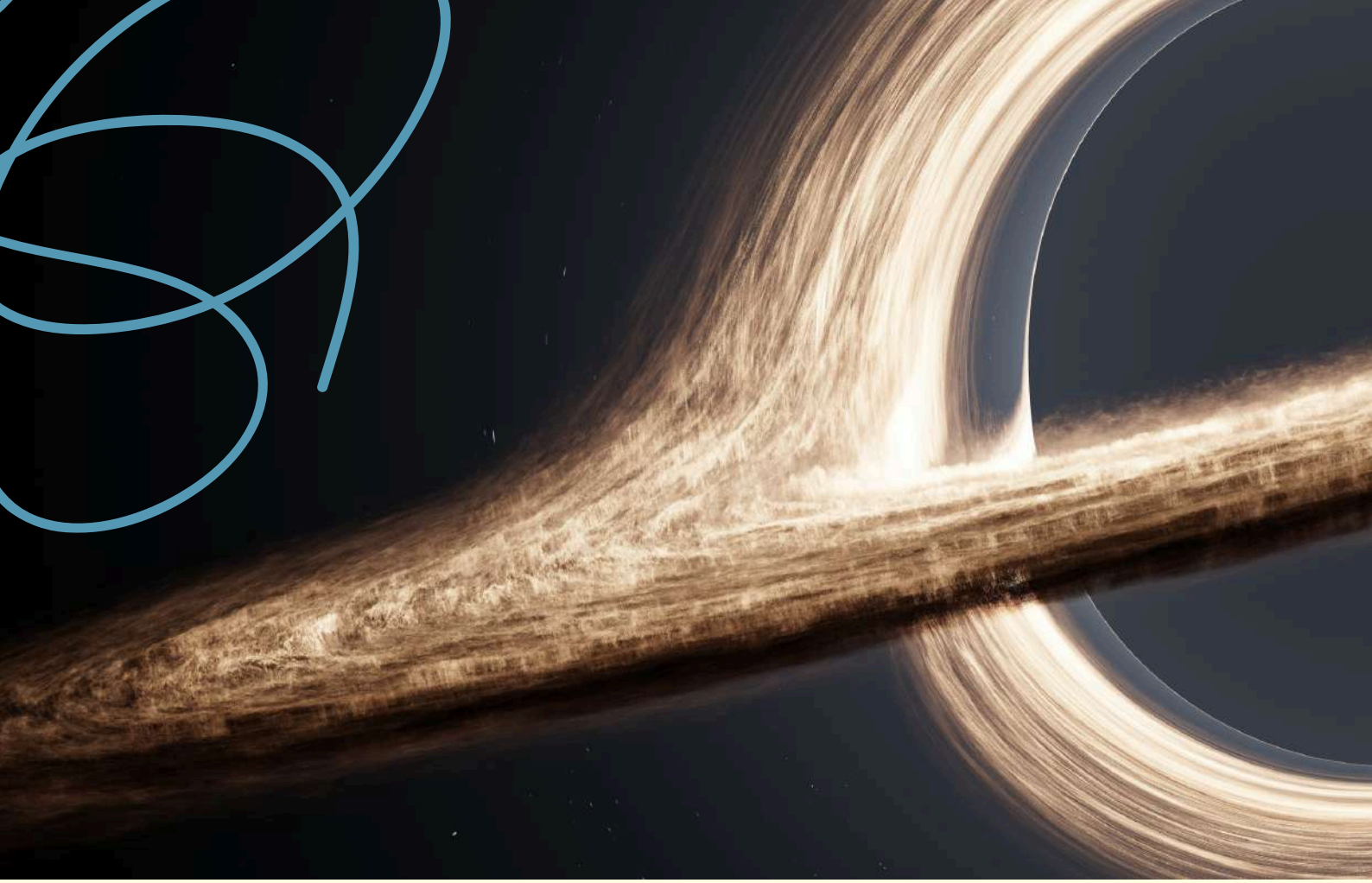
By Ayana Jayakrishnan

A UNIVERSE FULL OF SECRETS: WHAT IS IT HIDING?

Every night, above the noise of our cities and villages, lies an enormous and mysterious universe. Looking up at this universe, do you ever stop to think about what exactly is out there? What are those tiny and bright, twinkling dots in the sky? And, how far away are they from us? What if I told you that those glowing dots are huge stars as big as our sun, or even bigger?

Earth, known as the blue planet, spins daily and orbits the Sun once a year. It is one of eight planets in our solar system. Closest to the Sun is Mercury, followed by Venus, the hottest planet with many poisonous clouds (interestingly, 1 day on Venus equals 1 year on Earth!). Mars is known as “The Red Planet”. Meanwhile, Jupiter, the largest planet of all, can fit 1,300 Earths inside it, and has up to 95 moons! Saturn is famous for its icy rings, and the final two planets, Uranus and Neptune, are cold, gaseous planets located further away in our solar system.

Galaxies are amazing and beautiful. Think of them as huge cities in space filled with dust, stars, and planets instead of cars and buildings. We live in a galaxy called the Milky Way, and there are around 200 billion to 2 trillion other galaxies out there. These galaxies can have different shapes: some are spiral, some are elliptical,



and others don’t even have a definite shape. When you look up at the night sky, those bright twinkling dots are stars: big balls of burning gas that give off a lot of heat and light. The Sun is our closest star, but the other stars are so far away that their light takes millions of years to reach us. So, when we see those stars, we’re seeing what they looked like a long time ago.

A black hole is a strange and extremely powerful object in space. It is so powerful that it has a strong force of something known as gravity, which pulls everything and anything around it. Nothing can escape it, not even light! If you were to move close to a black hole, time would move extremely slowly. These black holes sound scary, but don’t worry, because they exist very far away from Earth.

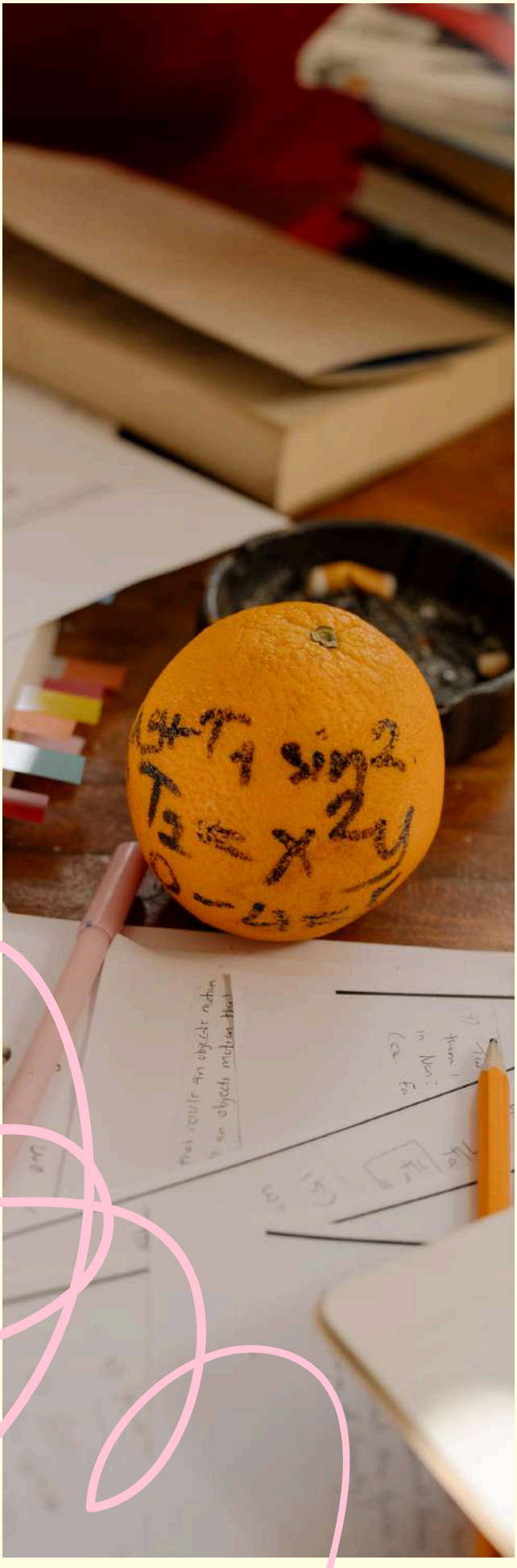
Space is a wonderful place. From twinkling stars to mysterious black holes, there’s always something new and exciting to learn. The next time you find yourself looking up at the night sky, take a moment to ask yourself some questions. It’s that sense of curiosity that lets you dive deeper into the incredible world of space and astronomy. Who knows? Maybe one day, you'll discover something new among the stars!

Breaking Barriers - Changing Education

By Udita Talpade

Disabilities—both physical and cognitive—can affect a child's ability to learn in a traditional school setting. This, in turn, can influence their chances of earning a comfortable living later in life. However, substantial progress has been made, particularly by those directly affected. Long-standing institutions have also played a key role in improving education for children with impairments. For example, the Perkins School for the Blind, as the name suggests, provides education to both children and adults with visual impairments. Similarly, Nick

Vujicic, a motivational speaker born without limbs, founded the organisation 'Life Without Limbs' to support others facing similar challenges. In India, the 'Samagra Shiksha' scheme was launched in 2018 and then extended until 2026. This programme aims to provide quality education to all students, including the disabled. It also hopes to achieve primary and secondary education for all youth by 2030.



But what about those whose conditions aren't physical? Many children have cognitive learning disabilities, which are often overlooked. But measures are being taken to ensure that these children can receive adequate education even with their impairments. UNICEF has launched a programme in order to break down barriers that restrict children from a proper education. Their efforts include building awareness and improving education systems, among others. Additionally, according to the 2023 GEM (Global Education Monitoring) Report, assistive technologies and devices (such as screen readers or alternative keyboards) created based on UDL's (Universal Design for Learning) principles have proved to be highly effective.

Overall, accessing education for the disabled has been a longstanding struggle, impacting many capable students. Their education is a necessity, and the efforts of individuals, organisations, and governments are finally bringing about a much-needed change in the world.

Artificial Intelligence

By Madhurya Mahidhara

As the world of technology develops, humans have created computer systems that talk, think, and do tasks like humans. This is called artificial intelligence, or AI. AI copies human intelligence and is made to recognise patterns and solve problems.

There are many AI assistants we use daily, such as Siri, Alexa, Gemini, and even Google Maps. Many map apps use AI to track traffic data and to give you the best route. AI chatbots such as ChatGPT and DeepSeek have also been developed that can chat with you, conduct research, and create creative content.

But how does this work? They work by following three main rules: understanding the input, generating responses, and learning and improving. When a user inputs a question, the AI understands basic human language and the meaning behind your words. Then, it gives answers by using conversational rules to generate more human-like answers. Lastly, they improve their responses by learning from feedback, by allowing users to give a rating for their response. Behind the scenes, AI uses smart and complex tools to help all this happen.

Today, we use AI without even realising it. Although it seems tricky, it's all about computer systems understanding how humans behave and feel. Understanding how AI works is important because it is changing the world, and knowing how it works will help you be ready for the future.

THE MAGIC OF LETTING GO

By Avika Gupta

Anxiety is when stuff that isn't that deep bothers you so much that it starts affecting you physically, you get anxiety attacks, panic attacks, headaches, get nervous stomach aches, and feel helpless.

Depression is when everything gets so bad that you don't even want to get out of bed anymore. It's when you lose interest in the things that used to make you happy.

Anxiety and depression aren't caused by caring; they are caused by caring too much about the wrong things. To learn the delicate craft of not letting unnecessary things bother you, you must learn the magic that comes with letting people go. People, even your friends, if they do anything that hurts you, it's not your right but your job to remove them from your life. Anyone who causes you possible permanent damage does not deserve to be in your life. You don't need to keep a relationship with somebody just because you have a lot of memories with them or just because you've known them for x number of years.... If you knew the plane was about to crash, would you still get on it just because the ticket was expensive? I'm not talking about a plane. People are only meant to stay in your life for a

particular amount of time; they are going to leave, whether you try to hold on or not. You only meet each person to learn a particular lesson(even if it hurts, it was a lesson). After that, you are just boarding the plane because the ticket was expensive. Life isn't about holding on to the people, the moments, or the time; it's about holding those moments in your heart and carrying on with your life so you can make more of these moments with different people at different places. When somebody hurts you, just let go. You should learn the subtle art of letting people go. Very few people are meant to stay in your life forever. Although it might hurt at first, it'll only make you happier. The people who hurt you are the ones you are supposed to let off If you had 3 snakes, you would let go of the one that bit you because now you know it's poisonous. As people keep hurting you, and you keep letting them go, you will build a safe and positive ecosystem for yourself with the right people. You aren't losing people; you are just growing up. And even though it sucks, you are going to love it.... if only you realise it. Of course, I believe that hurt is hurt, and it does not have to be justified. If it hurt you, then it hurt you; no explanation needed. I also believe that what hurt me the most at 13 might look stupid to me at 30, but at 13, that was rock bottom, and at 13, that broke me, so again, no questions asked.

Although what you can do is remove the people who cause you unnecessary hurt from your life. Just let go.

How do you know you need to detach from someone?

They cause you hurt often
They make you feel drained
They make you feel demotivated
They make you feel bad about yourself
They cause permanent damage