



THE TIMES OF INDIA

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TODAY'S EDITION

Do you know what is the significance of Vanshawali in History? This and more-decode concepts in various subjects with Times NIE
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Explore the beauty and tranquillity of Nashik through a young traveller's lens
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Beleaguered India face gritty Afghans in bid to bring campaign back on track
PAGE 4



STUDENT EDITION
WEDNESDAY, NOVEMBER 3, 2021

The UN COP26 meet will continue for another two weeks to make plans to forestall the impacts of global warming

CLICK HERE: PAGE 1 AND 2

India to hit net-zero climate target by 2070: Modi



India's economy will become carbon neutral by the year 2070, Prime Minister Narendra Modi announced on Monday at the COP26 climate summit in Glasgow. "By 2070, India will achieve the target of net-zero emissions," Modi told more than 120 leaders at the critical talks.

5 COMMITMENTS MADE BY MODI

- COMMITMENT 1**
By 2030, India will increase its non-fossil capacity to 500 gigawatt.
- COMMITMENT 2**
By 2030, India will fulfil 50 per cent of its energy requirements with renewable energy.
- COMMITMENT 3**
India will reduce one billion ton of the total projected carbon emission between now and 2030.
- COMMITMENT 4**
By 2030, India will reduce its economy's carbon intensity to less than 45%.
- COMMITMENT 5**
India will achieve the target of net zero emissions by 2070.

Debunked: Top 5 Climate Change MYTHS



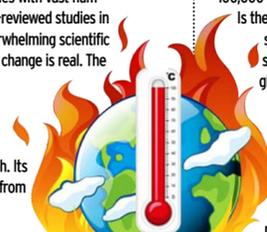
As world leaders discussed the COP26 climate summit, we examine some common claims that question the existence of global warming caused by humans...

IT'S A HOAX / CONSPIRACY

1 Some brand the crisis a hoax by scientists to justify their research grants – or even a conspiracy by governments to control people. If so, it would have to be one of the extraordinary complexity, coordinated by successive governments in scores of countries with vast numbers of scientists. Thousands of peer-reviewed studies in the public domain have led to an overwhelming scientific consensus that human-made climate change is real. The most comprehensive source is the Intergovernmental Panel on Climate Change (IPCC). Far from being a covert operation, its evidence and methods are published at www.ipcc.ch. Its latest report, approved by delegates from 195 states, lists 234 authors from 66 countries as contributors.

CHANGE IS NORMAL

2 Scientists know the Earth has long alternated between ice ages and periods of warming – about one ice age every 100,000 years over the past million years. Is the current heating just another stage in this cycle? No – the speed, relative abruptness and global extent of the heating over the past 50 years make it different this time. This is based on several data: palaeological analysis of sediment, ice and tree rings for the period before the Industrial Revolution, and recorded temp since 1850.



SCIENTISTS QUESTION CLIMATE CHANGE

3 Specialists often voice scepticism, signing joint statements and editorials. But an examination of their credentials in numerous cases have revealed that they are rarely climate scientists. Among scientists' criteria for measuring the legitimacy of claims, one of the most important is consensus, and the consensus on climate change is now overwhelming. A recent survey by Cornell University of thousands of peer-reviewed studies on climate change found that in more than 99% of them, the authors agreed that climate change was caused by humans



A LITTLE WARMING IS GOOD

4 "Large parts of the country are suffering from tremendous amounts of snow and near record-setting cold.... Wouldn't be bad to have a little of that good old-fashioned global warming right now!" Former US president Donald Trump's tweet blended a common climate myth that cold weather is evidence against climate heating with the assumption that even if warming is happening, it isn't all bad. Climate is a measure of average weather variations over time. A day or one week of snow is not enough to prove that average temp are not rising over decades.



Could "a little global warming" be nice? NO. Parts of Siberia could become arable, expanding food resources - but the melting of permafrost in the same region threatens to create more problems. A 2° rise may sound pleasant enough - but the IPCC calculates that it is enough to drive up the level of the seas by half a metre or more, enough to drown coastal cities

NO PROOF OF HUMAN CAUSE

5 As evidence of unusual warming has become incontrovertible, some sceptics concede it is happening but deny it is caused by the carbon emissions from humans burning fossil fuels.

The IPCC developed a climate model that measures the impact of different factors. It calculates the extent of heating with and without the effect of human activity. This year's IPCC report concluded that it is unequivocal that human influence has warmed the atmosphere, ocean and land

'Life of Girl' app to ensure safe passage launched

'Life of Girl', an intelligent mobile application and a community, which serves colleges, corporate, and NGOs to enhance physical, digital and psychological safety standards, has been launched in Hyderabad. It takes predictive steps, preventive measures, and ensures all reactive measures like intimating police department and nearest set of volunteers to ensure safety of the person in distress.



According to its CEO and founder, King Vignan Joseph, when a person travels from point A to point B, the application will suggest the safest route based on the possibility of receiving help on time, volunteer ratings, data from government sources, and other relevant associated factors.

Whenever the individual moves to a new place and does not feel safe with the surroundings, the individual can resort to safe haven to reduce vulnerability. It provides information like "safety score" of a particular place, which might be frequented or being visited for the first time

by app users. The app provides means to stay connected with the organisation and all volunteers in the geographical locality identified. Volunteers who are on the platform or those who strive to make a locality safer for other will be rewarded as a token of appreciation. This app serves safety to all genders, and is intended for everybody who wants to help others.

T20 World Cup 2021: How can India qualify for the semi-finals

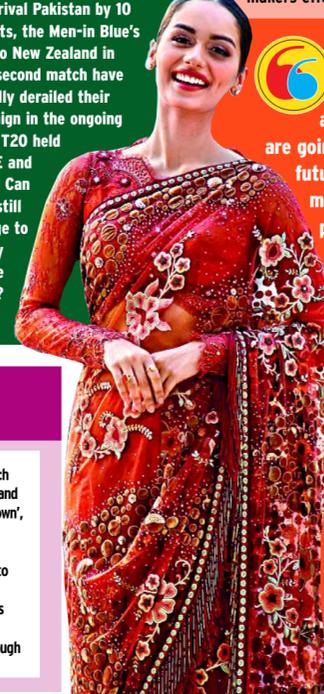


SPORTS
POSSIBLE SCENARIOS
India has to win all their remaining matches in the tournament. They play next against Afghanistan, followed by Scotland and Namibia. India will have to ensure that they win by a big margin, since their net run-rate has got a real beating after losing both their matches against Pakistan and New Zealand pretty badly. Afghanistan has to win against New Zealand to ensure all teams are tied on six points. The team with the best run rate will go through to the next phase of the tournament.

Favourites India are now in danger of getting knocked out of the T20 World Cup after their crushing defeats in the first two matches in the Super 12 stage. After losing against arch-rival Pakistan by 10 wickets, the Men-in-Blue's loss to New Zealand in their second match have virtually derailed their campaign in the ongoing World T20 held in UAE and Oman. Can India still manage to qualify for the semis?

Manushi roped in for UNICEF's nationwide youth campaign

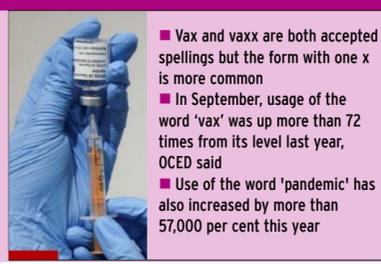
Former Miss World 2017 Manushi Chhillar has been roped in by the UNICEF for a youth campaign. She says, there is an urgent need to connect young people to the 21st century skills and livelihood opportunities, while engaging them as change-makers effectively.



FOR A CAUSE
Youth are like a spark that can light lamps. We are the future, and whatever we sow today, we are going to reap a lot more of it in the future. India has more than 300 million young people, and by preparing them for the transition to work and engaged citizenship, the potential for India's progress would be unlimited. There is an urgent need to connect young people to 21st century skills and livelihood opportunities, while engaging them as change-makers effectively. Young people bring fresh ideas and a new outlook to the most pressing problems, and we need to provide them with platforms to take their ideas forward
Manushi Chhillar

IT'S OFFICIAL: VAX IS OED'S 2021 WORD OF THE YEAR

Vax has been chosen as the word of the year by the Oxford English Dictionary (OED). Due to the ongoing Covid-19 pandemic, words related to vaccines spiked in frequency in 2021, with double-vaxxed, unvaxxed and anti-vaxxer all seeing a surge in use, the BBC reported. Vax was an obvious choice, as it has made "the most striking impact", the OED senior editor Fiona McPherson was quoted as saying.



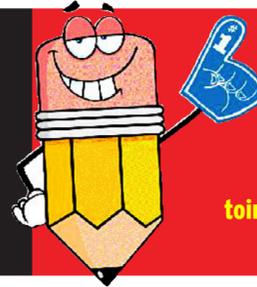
Vax and vaxx are both accepted spellings but the form with one x is more common. In September, usage of the word 'vax' was up more than 72 times from its level last year, OED said. Use of the word 'pandemic' has also increased by more than 57,000 per cent this year

Vax is derived from the Latin word 'vacca', which means cow. It was first recorded in English in 1799. Its derivatives vaccinate and vaccination both first appeared in 1800. According to the OED, this is due to English physician and scientist Edward Jenner's pioneering work on vaccination against smallpox in the late 1790s and early 1800s

Oxford Languages and Collins each decide their own word of the year, and in 2020, while Collins chose 'lockdown', Oxford decided since it was an unprecedented year with too many contenders, it expanded its award to encompass a handful of newly key words including lockdown, bushfires and Covid-19, as well as Black Lives Matter, WFH, keyworkers and furlough



Beginning the journey of learning in an alphabetical order, Times NIE takes you through one concept from each subject every week



TEACHERS, IF YOU HAVE A CONCEPT THAT CAN CHANGE A CLASSROOM, SHARE IT ON

toinie175@gmail.com WITH YOUR PHOTOGRAPH

CLASSROOMS TO EXPERIENCE ZONES

GEOGRAPHY

VOLCANO



Openings of the Earth's surface

When a volcano erupts lava, ash and gas is expelled from the Earth's surface. The hole at the top is known as the **VOLCANIC CRATER**.

AN ACTIVE VOLCANO is one that has erupted within the last 10,000 years or it has some type of activity going on such as gases being released or earthquakes around it.

A DORMANT VOLCANO is one that hasn't erupted in the last 10,000 years, however there is a chance it will erupt at some point.

AN EXTINCT VOLCANO is one that hasn't erupted in the last 10,000 years and is unlikely to erupt in the future.

INTERESTING FACTS

- Volcanoes hold very hot liquid called magma. Magma is molten rock, which glows bright orange and is held in a chamber within the volcano.
- Once a volcano erupts, the magma comes out of the crater.
- The expelled substance is called lava. Once the lava cools down, it solidifies to rocks.



MAKE YOUR VOLCANO!

WHAT YOU'LL NEED

- 2 plastic cups
- 1 paper plate
- Roll of silver foil
- Glug of red food colouring
- 50 ml vinegar
- 50 ml washing up liquid
- 3 tablespoons bicarbonate of soda; lump of blue tack
- And a parent to help out!

HOW DO YOU DO IT

- Attach the plastic cup to the plate using blue tack - you can use scissors to adjust the height of the cup, depending on how big you want your volcano to be.
- Cover the plate and cup with a sheet of foil - don't forget to make a hole above the cup for



the caldera. Mix together roughly equal amounts of vinegar and washing up liquid, and add red food dye to give the experiment that molten lava look.

Pour the mixture into the cup, filling it to about halfway or slightly over it. Pour in two or three teaspoons of bicarbonate of soda. Stand back and watch your eruption unfold....

Tip - try adding different combinations of vinegar and baking soda to create different and bigger eruptions.

SCIENCE

VIRUS



These germs need to be inside living cells to grow and reproduce. Most viruses can't survive very long if they're not inside a living thing like a plant, animal, or person. Whatever a virus lives in is called its host. When viruses get inside people's bodies, they can spread and make people sick. Viruses cause chickenpox, measles, flu and many other diseases.

TEACHING CORONA IN INNOVATIVE WAYS

MATHS BEHIND PANDEMIC

Frank Wang, a math teacher at Oklahoma School of Science and Mathematics, began teaching kids the math of epidemics. "Where teaching about exponential growth might have them scratching their heads in the classroom, now we can show that these models are being used in hospitals to calculate things like: how many ventilators, or how many hospital beds, will they need?" For example, Wang says, "Forty million people visit Nevada. They stay a couple days and then go back home. Calculate the incubation period or mortality rate."



VIROLOGY AND BIOLOGY

Scott Johnson's class at Century High School, North Dakota, says he plans to have his students study how the coronavirus impacts the body as part of 3D learning - a scaffolding of learning that reflects real-life scientific inquiry.

JOURNALISM

Teaching students to become storytellers - to find and tell the unique stories that exist as a result of living through the pandemic, accurately in compelling ways - is a powerful learning experience.

ACTIVITY: BECOME MAKERS OF HISTORY

When teachers ask students to journal their experience - in writing, sketches, videos, or other forms of expression - they are harnessing a powerful tool for providing an outlet for kids' feelings. At the same time, journaling allows students to create a record of their daily lives at a time when the new normal stands in stark contrast to life even just one month ago.

LANGUAGE

VARIETY

By Kartik Bajoria
Jaipur-based
Communication Skills
Educator & Writer



You might have heard the adage, variety is the spice of life! It most certainly is, be it clothing, holidays, friends or food. As it turns out, even in language and writing, it is good to have variety.

Having said that, variety doesn't necessarily or always equate to flowery, complex, difficult words or vocabulary. Variety simply means that rather than repeating the same word, replace it with a synonym or a phrase. **LET US LOOK AT AN EXAMPLE:** If you have a sentence that says, "The school had ordered the most cutting-edge computers, making it the only school in the entire state to have such advanced systems, a fact that the head



of the school was particularly proud of." The usage of 'school' thrice in the same sentence could definitely do with some variety, and perhaps the same sentence would read and sound better if it were to say, "The school had ordered the most cutting-edge computers, making it the only one in the entire state to have such advanced systems, a fact that the head of the institution was particularly proud of." Hence, variety adds value to writing skills and adds depth to language.



HISTORY

VANSHAVALI

Onkar Singh Rathore writes for Times NIE about interesting events and terms from History that students must know about. The author is interning at the History Diaries - an initiative to revamp the current pedagogical system of History through tours, drama in schools

The genealogical records of the Kings and the different aristocratic families maintained from the beginning of record-keeping to date are often called as Vanshavali.

MATHS

By Sandeep Srivastava
Educator since 20 yrs,
he specialises in making Maths easy and fun



VECTORS

The importance of algebra

Mathematics is the language for abstraction of real world and scientific situations, entities, relationships, and events. ALGEBRA is that branch of mathematics which showcases its abstractive power; it generalises arithmetical situations to create expressions using the four basic operations. 'M (marks for the first term)' = 20% F (first class test) + 30% P (project work) + 50% E (term exam), is a generalised arithmetical expression for calculating marks of a subject in a term.

Algebra structures any real world situation/relationships of two or more things/objects in a way that its arithmetic expression (called equation) has only one (rigid) interpretation (each equation represents one unique reality/situation/relationship).

Linear algebra - the simplest, yet most powerful algebra

The relationships expressed by algebra can be equations that could be linear, simultaneous linear equations, quadratic, cubic, and so on (we already know these). The complexity of expressing and 'solving' equations rapidly multiplies as we move from linear to quadratic to cubic, etc. Linear algebra is the mathematical world of system of linear equations - the simplest set of equations.

The world of linear algebra

Google search became very popular within years of its launch, and remains so; it uses linear algebra for ranking the pages displayed after a search. Higher competence in knowing and applying linear algebra tools is at the foundation of the ability to use 'big data' to inventively address the most diverse set of scientific, technological, social, economic (and political/governance) goals and challenges.

The importance of linear algebra

It's linear algebra that gives wings to all of us to imagine, interact and manipulate n-dimensional situations (scientific, technological, social, etc.), read each of the dimensions as being different variables that together define the situations. Ironically, linear algebra most easily takes us beyond

the limits of 4-dimensional world!
Linear algebra and (artificial) intelligence

To most effectively understand and model more and more data, we often increase the number of variables while gathering the data; more intelligence demands more variables. As a result, linear algebra is becoming more powerful and useful for building increasingly intelligent devices and systems.

Mathematical world of linear algebra

The simple tools linear algebra uses are linear equations, vectors and matrices. Vector matrix is one of the most powerful concepts of linear algebra.

Welcome vectors

We know that mathematics is the language of things/situations which are quantifiable. And there are two kinds of quantifiable things - scalar (just the magnitude is enough to fully describe it), and vector (magnitude as well as direction is needed).

Getting a feel of vectors

A vector is what is needed to 'carry' the point A to the point B; the Latin word vector means 'carrier' (so, vector is a very common term in biology; means 'carriers of diseases', such as mosquitoes) virus.

Vectors are geometrical objects which need magnitude and direction to be comprehensively measured, understood, expressed, and used in mathematical operations. For example, if you want to know about the motion of an object, you need to consider its speed and direction. One way to handle these two ideas is to handle them separately, but using vectors, you could save time and labour by handling them as a single concept.

When geometrically represented, a vector is a line segment. It has a starting point and an ending point with both a fixed length and direction.

The simplest way to understand a vector is to think of it as a line on a road map. For example, in the diagram given below the vector is of length 3 units and at an angle of 30 degrees.

A vector represented by line segment PQ starts at P and extends in the direction of Q. The notation \vec{PQ} or \vec{PQ} is used for vectors.

A vector with fixed initial and ter-

minal point is called a bound vector. When only the magnitude and direction of the vector matter, then the particular initial point is of no importance, and the vector is called a free vector. A vector with magnitude 4 and direction as positive x-axis can be any of these vectors.

Two vectors are the same if they have the same magnitude and direction.

Machine learning and vectors

In machine learning software, a vector is an ordered set of data - of one or more values called scalars. Vectors are built from components, which are ordinary numbers. You can think of a vector as a list of numbers, and vector algebra as operations performed on the numbers in the list.

Vectors in Cartesian space

In the Cartesian coordinate system, a bound vector can be represented by identifying the coordinates of its initial and terminal point. For instance, the points $A = (1, 0)$ and $B = (0, 1)$ in xy-coordinate determine the bound vector pointing from the point $x = 1$ on the x-axis to the point $y = 1$ on the y-axis.

We see that the ordered pair denoted (x, y) defines any vector uniquely as $\langle x, y \rangle$. The coordinate x is the scalar horizontal component and coordinate y is the scalar vertical component of the vector.

In the picture below, the blue vector is the position vector and all the red vectors are free vectors having the same magnitude and direction as that of the position vector.

Coordinates make algebra easy

This coordinate representation of free vectors allows their algebraic features to be expressed in a convenient numerical fashion. For example, the sum of the two (free) vectors $(1, 2)$ and $(-2, 0)$ (both in black) is the (free) vector $(1, 2) + (-2, 0) = (1 - 2, 2 + 0) = (-1, 2)$ (in red).

Scalar and vector

AB has horizontal scalar component as $a_2 - a_1$ and vertical scalar component as $b_2 - b_1$. Thus, joining the origin with the point with coordinates $(a_2 - a_1, b_2 - b_1)$ will give us the position vector \vec{OP} equivalent to the original vector \vec{AB} , since \vec{OP} and \vec{AB} have same magnitude OP & AB direction.

INDIAN PURANAS are considered to be the most reliable source of genealogical records because they have genealogical lists from the beginning of time, from the first kings and their origin which is traced back to the Sun and Moon to the dynasties of Kali era i.e. Sisungas, Nandas, Mauryas, Shungas, Andhras and Guptas.

THE MAURYA DYNASTY is mentioned with detailed information in Vishnu Purana. The Matsya Purana is a reliable source for Andhra Dynasty, while one can find the explicit genealogy of the Guptas in Vayu Purana.

ROYAL INSCRIPTIONS naturally tend to exaggerate the achievements but they also provide the genealogy of the rulers which



DID YOU KNOW?

The Indian Puranas are considered to be the most reliable source of genealogical records because they have genealogical lists from the beginning of time

can be considered reliable. **THE CAVE 16 INSCRIPTIONS AT AJANTA** devoted the first 20 verses to the donor's genealogy i.e. to the ruler Harishena. The Ghatotkacha cave inscription of Varahdeva gives a detailed genealogical record of the donor's family. The Junagarh rock in-

scription of King Rudradaman also has a brief genealogy of the ruler. Sometimes Prashasti also throws light on the lineage. **KALHAN'S RAJATARANGINI** literally 'The River of Kings' is also one of the credible sources which covers early to 12th century history of the Kashmir region.

