



SHREYAS Scheme

For Prelims: SHREYAS, National Overseas Scheme for SCs, [Scheduled Castes \(SC\)](#)

For Mains: Role of financial assistance and scholarships in bridging educational disparities in India

Source: [PIB](#)

Why in News?

The **Scholarships for Higher Education for Young Achievers Scheme (SHREYAS)** initiative has been a cornerstone in India's efforts to empower students from [Scheduled Castes \(SC\)](#) and [Other Backward Classes \(OBC\)](#) by providing them **access to quality education**.

What is SHREYAS?

▪ About:

- SHREYAS is an umbrella scheme, under the Ministry of Social Justice & Empowerment.
- SHREYAS aims for the Educational Empowerment of OBC & Economically Backward Class (EBC) students by way of **awarding fellowships (financial assistance)** in obtaining **quality higher education and interest subsidy on educational loans for overseas studies**.

▪ Sub-Schemes:

- The umbrella scheme of "SHREYAS" comprises **4 central sector sub-schemes**.
 - **Free Coaching Scheme for SCs and OBCs:**
 - **Objective:**
 - Provide **coaching of high quality to economically disadvantaged SCs and OBCs for competitive exams** and admission to technical and professional institutions.
 - **Income Ceiling:** Family income under the scheme is **capped at 8 lakhs per annum**.
 - **Slot Allocation:** 3500 slots are allotted annually.
 - **Gender Inclusivity:** **30% of slots** are reserved for **females** in both categories.
 - **Allocation Ratio:** The SC: OBC ratio is **70:30**, ensuring equitable access.
 - **Outcomes:** From 2014-15 to 2022-23, 19,995 beneficiaries have benefited through this.
 - **Top-Class Education for SCs:**
 - **Objective:** Recognize and promote **quality education among SC students, covering studies beyond the 12th class**.
 - **Income Ceiling:** The family income limit is set at **8 lakhs per annum**.
 - **Coverage:** 266 higher education institutes, including prestigious institutions like IIMs, IITs, and NITs.
 - **Scholarship:** Under the scheme, tuition fee, non-refundable charges, academic allowance and other expenses are provided.
 - **Outcomes:** From 2014-15 till 2022-23 21,988 beneficiaries have benefited

through this.

- **National Overseas Scheme for SCs:**

- **Objective:** Under the [National Overseas Scheme for SCs](#), financial assistance is provided to the selected students from SCs; De-notified, Nomadic and Semi-Nomadic Tribes; landless agricultural labourers and traditional artisan categories, for pursuing masters and Ph.D. level courses abroad.
- **Eligibility:** A student with a total family income including the candidate should be less than **Rs. 8 lakhs per annum**, who has **more than 60% marks** in the qualifying examination, is below **35 years of age** and who secured admission in the **top 500 QS ranking foreign Institutes/ Universities**.
- **Scholarship:** Total tuition fee, maintenance and contingency allowance, visa fee, to and fro air passage etc. are provided to the awardees.
- **Outcomes:** From 2014-15 to 2022-23, 950 beneficiaries have benefited through this.

- **National Fellowship for SC Students:**

- **Aim:** This fellowship supports **SC students pursuing M.Phil/Ph.D. degrees in Sciences, Humanities, and Social Sciences** in Indian Universities/Institutions/Colleges recognized by the [University Grants Commission \(UGC\)](#).
- **Eligibility:** Candidates who have **qualified for the National Eligibility Test (NET-JRF)** or Junior Research Fellows for Science stream qualifying UGC-Council of Scientific and Industrial Research (UGC-CSIR) Joint Test.
- **Allocation:** The scheme provides for 2000 new slots per year (500 for the science stream and 1500 for the Humanities and Social Sciences).

What are the Other Education Schemes in India?

- [National Programme on Technology Enhanced Learning](#).
- [Beti Bachao Beti Padhao](#)
- [PM SHRI Schools](#)
- [National Means cum Merit Scholarship \(NMMS\)](#)
- [Swachh Vidyalaya Abhiyan](#)
- [Eklavya Model Residential Schools](#)

UPSC Civil Services Examination, Previous Year Question (PYQ)

Prelims

Q. Which of the following provisions of the Constitution does India have a bearing on Education? (2012)

1. Directive Principles of State Policy
2. Rural and Urban Local Bodies
3. Fifth Schedule
4. Sixth Schedule
5. Seventh Schedule

Select the correct answer using the codes given below:

- (a) 1 and 2 only
- (b) 3, 4 and 5 only
- (c) 1, 2 and 5 only
- (d) 1, 2, 3, 4 and 5

Ans- (d)

Mains

Q1. How have digital initiatives in India contributed to the functioning of the education system in the country? Elaborate on your answer. **(2020)**

Q2. Discuss the main objectives of Population Education and point out the measures to achieve them in India in detail. **(2021)**

Hunga Tonga-Hunga Ha'apai Volcano

For Prelims: [Hunga Tonga-Hunga Ha'apai](#) , Pinatubo , Krakatoa, Tambora, Samalas, Greenhouse Gases , [El - Nino](#) , [Paris Agreement](#) , IPCC, Cooling credits , Sun dimming.

For Mains: [Effect Of Volcano On Global Warming](#) , Types of volcano

[Source :TOI](#)

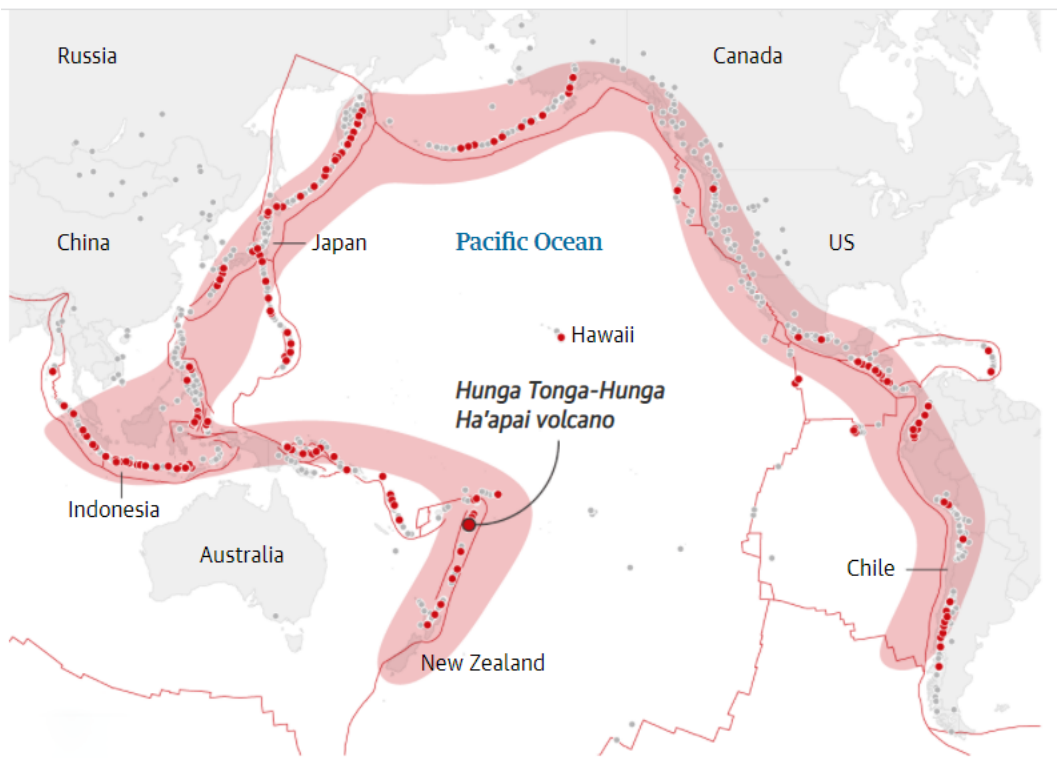
Why in News?

The Year 2023 has recorded unprecedented temperatures. Scientists believe one of the reasons for this may be an underwater volcanic eruption of **Hunga Tonga-Hunga Ha'apai in the South Pacific in 2022.**

What are the Key Points About Hunga Tonga-Hunga Ha'apai Volcano ?

- The Hunga Tonga-Hunga Ha'apai volcano is in the **western South Pacific Ocean**, west of the main inhabited islands in the Kingdom of Tonga.
- It is one of 12 confirmed **submarine volcanoes along the Tofua Arc**, a segment of the larger Tonga-Kermadec volcanic arc.
 - The Tonga-Kermadec arc formed as a **result of subduction of the Pacific Plate beneath the Indo-Australian Plate.**
- It is an **undersea Volcano** consisting of two small uninhabited islands, Hunga-Ha'apai and Hunga-Tonga.

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How will the Earth's Temperature be Affected by the Hunga Tonga Volcano?

- Generally, massive volcanic eruptions usually **reduce temperatures** because they spit out vast amounts of **sulfur dioxide**, which form **sulfate aerosols** that can reflect sunlight back into space and **cool Earth's surface** temporarily, generally referred as **Sun dimming**.
- However, the Tonga eruption had another effect because it occurred **underwater**. The eruption of Hunga Tonga-Hunga Ha'apai in 2022 **produced a plume 58 km high, and produced the biggest atmospheric explosion ever recorded**.
- The Hunga Tonga-Hunga Ha'apai eruption is peculiar because, in addition to causing the largest increase in **stratospheric aerosol** in decades, it also injected vast amounts of **water vapor** into the stratosphere.
- Water vapor is a **natural greenhouse gas** that absorbs solar radiation and **traps heat in the atmosphere**.
 - The aerosol and water vapor impact the climate system in opposing ways, but several studies have proposed that, **due to its larger and more persistent water vapor plume**, the eruption could have a **temporary net surface warming effect**.

How have Previous Volcanic Eruptions Impacted the Climate Globally?

- In the past 2,500 years, there have been about eight even bigger eruptions, according to the [Intergovernmental Panel on Climate Change \(IPCC\)](#).
- Among them, **Tambora in Indonesia** in 1815 led to a "year without a summer" - with failed harvests from France to the United States.
- Even worse, the eruption of **Samalas in Indonesia** around 1257 led to famines and may have kicked off the **Little Ice Age**, an unusually cool period that lasted until the 19th century.

What are the Types of Volcanoes ?

- In general, Volcanoes can be divided on the basis of **Type of Eruption & Periodicity of Eruption**.
 - **Based on Type of Eruption:** The nature of the eruption mainly depends on the viscosity of the magma and are of two types:
 - **Basic:** The basic magma are dark coloured like basalt, rich in iron and magnesium but poor in silica. They travel far and generate broad shield volcanoes.

- **Acidic:** These are light-coloured, of low density, and have a high percentage of silica and therefore it makes a familiar cone volcano shape.
- **Based on frequency of Eruption:**
 - **Active volcanoes:** They erupt frequently and are mostly located around the Ring of Fire.
 - E.g.: **Mount Stromboli** is an active volcano and it produces so many gas clouds that it is called the Lighthouse of the Mediterranean.
 - **Dormant Volcano:** These are not extinct but have not erupted in recent history. The dormant volcanoes may erupt in future.
 - E.g: **Mount Kilimanjaro**, located in **Tanzania**, **also** the highest mountain in **Africa, is known** to be a dormant Volcano.
 - **Extinct or inactive volcanoes** have not worked in the distant geological past.
 - In most cases the crater of the Volcano is filled with water making it a lake. E.g.: **Deccan Traps**, India.

Conclusion

- Any number of phenomena can sway global temperatures, from [El Niño](#) conditions in the Pacific Ocean to wildfires in Siberia.
- The Hunga Tonga-Hunga Ha'apai eruption may nudge the temperature past 1.5°C of warming, but that doesn't mean the [Paris Agreement](#) has failed yet; the event demonstrated how close the world is to its agreed-upon tipping point.

UPSC Civil Services Examination, Previous Year Question (PYQ)

Q. Mention the global occurrence of volcanic eruptions in 2021 and their impact on regional environment. (2021)

Fostering Ethical AI

For Prelims: Fostering Ethical AI, [Ethical Artificial Intelligence \(AI\)](#), [Machine Learning \(ML\)](#), AI facial recognition, Generative AI.

For Mains: Fostering Ethical AI, Need for establishing Ethical AI.

[Source: TH](#)

Why in News?

Recently, some business leaders emphasized the Imperative of collaboration among governments, industry, and ecosystem players to develop [Ethical Artificial Intelligence \(AI\)](#).

What is Artificial Intelligence (AI)?

- **About:**
 - AI is the **ability of a computer, or a robot controlled** by a computer to do tasks that

are usually done by humans because they require human intelligence and discernment.

- Although there is no AI that can perform the wide variety of tasks an ordinary human can do, some AI can match humans in specific tasks.

▪ **Characteristics & Components:**

- The ideal characteristic of AI is its ability to rationalize and take actions that have the best chance of achieving a specific goal. A subset of **AI is [Machine Learning \(ML\)](#)**.
 - **ML** is a method of teaching computers to learn from data, without being **explicitly programmed**. It involves using algorithms to analyze and draw insights from data, and then using those insights to make predictions or decisions.
 - Deep Learning (DL) techniques enable this automatic learning through the absorption of huge amounts of unstructured data such as text, images, or video.

What is Ethical AI?

▪ **About:**

- Ethical AI, also known as Moral or Responsible AI, refers to the **development and deployment of AI systems** in a manner that aligns with **ethical principles, societal values**, and human rights.
- It emphasizes the **responsible use of AI technology** to ensure that it benefits individuals, communities, and society as a whole, while minimizing potential harms and biases.

▪ **Key Aspects of Ethical AI:**

- **Transparency and Explainability:** AI systems should be designed and implemented in a way that **their operations and decision-making processes are understandable and explainable** to users and stakeholders. This promotes trust and accountability.
- **Fairness and Bias Mitigation:** Ethical AI aims to **mitigate biases and ensure fairness in AI algorithms** and models to prevent discrimination against certain individuals or groups based on factors like race, gender, ethnicity, or socioeconomic status.
- **Privacy and Data Protection:** Ethical AI **upholds individuals' right to privacy and advocates for the secure and responsible** handling of personal data, ensuring consent and compliance with relevant privacy laws and regulations.
- **Accountability and Responsibility:** Developers and organizations deploying AI systems **should be accountable** for the outcomes of their AI technologies. Clear lines of responsibility and mechanisms for addressing and **rectifying errors or harmful impacts are essential**.
- **Robustness and Reliability:** AI systems should be **robust, reliable, and perform consistently** across different situations and conditions. Measures should be in place to handle adversarial attempts to manipulate or subvert the AI system.
- **Benefit to Humanity:** AI should be **developed and used to enhance human well-being**, solve societal challenges, and contribute positively to society, economies, and the environment.

What are the Ethical Concerns related to Artificial Intelligence?

▪ **Risk of Unemployment:**

- The hierarchy of labor is concerned **primarily with automation**. Robotics and AI companies are building **intelligent machines** that perform tasks typically carried out by **low-income workers: self-service kiosks** to replace cashiers, fruit-picking robots to replace field workers, etc.
- Moreover, the **day is not far when many desk jobs will also be edged** out by AI, such as accountants, financial traders, and middle managers.

▪ **Exacerbating Inequalities:**

- Using artificial intelligence, a company can drastically cut down on relying on the human workforce, and this means that revenues will go to fewer people.
- Consequently, individuals who have ownership in AI-driven companies will make all the money. Also, AI could compound digital exclusion.

- Further, **investment is likely to shift to countries where AI-related work is already established**, widening gaps among and within countries.
- **Tech Addiction:**
 - Technological addiction is the **new frontier of human dependency**. AI has already become effective at directing human attention and triggering certain actions.
 - When used right, this **could evolve into an opportunity to nudge society** towards more beneficial behavior.
 - However, in the wrong hands, it could prove detrimental.
- **Discriminating Robots:**
 - We shouldn't **forget that AI systems are created by humans**, who can be biased and judgemental.
 - It can lead to **AI facial recognition** and surveillance technology to discriminate against people of color and minorities.
- **AI Turning against Humans:**
 - What if artificial intelligence itself turned against humans, imagine an AI system that is asked to eradicate cancer in the world.
 - After a lot of computing, **it spits out a formula that does**, in fact, bring about the end of cancer - by killing everyone on the planet.

What are the Global Standards for Artificial Intelligence Ethics?

- **In 2021, the Recommendation on the Ethics of Artificial Intelligence** was adopted by UNESCO.
 - It aims to fundamentally shift the balance of power between people, and the businesses and governments developing AI.
- **UNESCO** members have agreed to use affirmative action to make sure that women and minority groups are fairly represented on AI design teams.
- The recommendation also underscores the importance of the proper management of data, privacy and access to information.
- It calls on **member states to ensure that appropriate safeguards** are devised for the processing of sensitive data and effective accountability and redress mechanisms are provided.
- The **Recommendation takes a strong stance that**
 - AI systems should not be used for social scoring or mass surveillance purposes
 - Attention must be paid to the psychological and cognitive impact that these systems can have on children.
 - Member states should invest and promote not only digital, media and information literacy skills, but also socio-emotional and AI ethics skills.
- UNESCO is **also in the process of developing tools to help assess** the readiness in the implementation of the recommendations.

Way Forward

- AI models should be designed in a way that allows for a clear understanding of their functioning and decision-making processes.
- AI models should be developed with a strong focus on data privacy and ensuring that individuals' sensitive information is handled appropriately and securely.
- There is a need for **governance norms developed in collaboration with industries** and stakeholders rather than arbitrary legislation, pointing to advanced thinking and ongoing discussions at the government level.
- There is a need for clarity regarding foundational models and data usage in AI systems.
- Ethical AI can be a transformative force, capable of empowering over a billion dreams and bridging the digital divide, not only in India but globally.
- AI and Generative AI must reach diverse populations, being accessible in various languages and regions.

Prelims

Q. With the present state of development, Artificial Intelligence can effectively do which of the following? (2020)

1. Bring down electricity consumption in industrial units
2. Create meaningful short stories and songs
3. Disease diagnosis
4. Text-to-Speech Conversion
5. Wireless transmission of electrical energy

Select the correct answer using the code given below:

- (a) 1, 2, 3 and 5 only
(b) 1, 3 and 4 only
(c) 2, 4 and 5 only
(d) 1, 2, 3, 4 and 5

Ans: (b)

Mains

Q. "The emergence of the Fourth Industrial Revolution (Digital Revolution) has initiated e-Governance as an integral part of government". Discuss. (2020)

PDF Reference URL: <https://www.drishtiias.com/current-affairs-news-analysis-editorials/news-analysis/21-09-2023/print>

