UPSC Preparation
Information and Communication Technology (ICT)

ICT stands for Information and Communication Technology. The term gives a broader meaning to Information Technology (IT). IT refers to all communication technologies that are the tools to access, retrieve, store, transmit and modify information digitally.

Under UPSC Mains GS 3 syllabus, the topic 'ICT' can be prepared in alignment with the following subtopics:

- Science and Technology- Developments and their Applications and Effects in Everyday Life.
- Achievements of Indians in Science & Technology; Indigenization of Technology and Developing New Technology.
- Awareness in the fields of IT, Computers.

What is ICT in everyday life?

ICTs are also used to refer to the convergence of media technology such as audio-visual and telephone networks with computer networks, by means of a unified system of cabling (including signal distribution and management) or link system. However, there is no universally accepted definition of ICTs considering that the concepts, methods, and tools involved in ICTs are steadily evolving on an almost daily basis.

Examples of ICT in everyday life is given below:

1. E-mail – Refers to ICT in online communication
2. E-commerce – /Refers to ICT in business
3. Online Banking – Refers to ICT in banking
4. E-government – Refers to ICT in governance
5. E-learning – Refers to ICT in learning

ICT in Education – India

Presently, the Central Government has subsumed ICT in schools under Rashtriya Madhyamik Shiksha Abhiyan, a national drive for secondary education.

The initiatives to incorporate ICT in education are mentioned below:

1. SWAYAM
   - Ministry of education and NPTEL, IIT Madras with the help of Google Inc. and Persistent Systems Ltd, developed this platform.
   - The platform is based on the three cardinal principles of the education policy of India:- Access, Equity, and Quality.
   - It provided all courses from Class 9 till post-graduation online to everyone free of cost.
   - The formats of study material provided under this platform are:
     - Video Lecture
     - Specially prepared reading material that can be downloaded/printed

- Self-assessment tests through tests and quizzes
- An online discussion forum for clearing the doubts
- Nine national coordinators that help in ensuring the quality of the content are:
  - AICTE (All India Council for Technical Education) for self-paced and international courses
  - NPTEL (National Programme on Technology Enhanced Learning) for Engineering
  - UGC (University Grants Commission) for nontechnical post-graduation education
  - CEC (Consortium for Educational Communication) for under-graduate education
  - NCERT (National Council of Educational Research and Training) for school education
  - NIOS (National Institute of Open Schooling) for school education
  - IGNOU (Indira Gandhi National Open University) for out-of-school students
  - IIMB (Indian Institute of Management, Bangalore) for management studies
  - NITTTR (National Institute of Technical Teachers Training and Research) for Teacher Training Programme
- Students to get a SWAYAM Certificate have to pay a fee to register for the final proctored examinations. The examinations take place at a designated venue. '

2. i-Share for India
   - It is an initiative started by the Ministry of Human Resources and Development (MHRD) to invite interested groups/agencies/organizations/communities to participate in the creation of an educational resources pool for School and Teacher Education.
   - It allows contribution in the form of Mobile enabled Apps/ Web-based ICT supplementary resources in any Indian Language for a school education or teacher education.

3. Shaala Siddhi
   - It is a national programme on school standards and evaluation
   - It is an initiative of the National Institute of Educational Planning and Administration (NIEPA).
   - It runs under the aegis of MHRD.
   - It works to evaluate school performance using the School Evaluation Dashboard called 'e-Samiksha'.

4. Shaala Darpan
   - It is used to monitor the primary and middle schools

5. Saransh Portal
   - It is a web portal launched in 2015 by the Central Board of Secondary Education (CBSE.)
   - The primary aim of Saransh is to promote ICT in education in schools.
   - It is a self-review tool for schools and parents.
   - It is considered to be in alignment with the Digital India initiative.
   - It has a provision to give access to all e-books of all classes.

6. e-Pathshala
   - It is an initiative to provide educational resources online to students, teachers, educators, and parents developed by NCERT and the Central Institute of Educational Technology (CIET).
   - It is available as an app in the Google Play app store and Windows.
   - Among other educational resources it provides,
     - CERT textbooks for classes 1-12

- Audio-visual resources by NCERT
- Periodicals
- Supplements
- Teacher training modules and,
- A variety of other print and non-print materials

7. Digital Gender Atlas
   - It has been developed to identify the low-performing geographic pockets for girls, particularly from marginalized groups such as scheduled castes, scheduled tribes, and Muslim minorities, on specific gender-related education indicators.

8. School GIS
   - It is a portal launched in 2016 that enables locating the geographic coordinates of the school in the countries.
   - A map presents the information of the school by its village, district, taluka, and grading.

ICT in School – Historical Context

- National Education Policy 1986 emphasized the need for education technology to enhance the state of education in schools.
- Two centrally sponsored schemes that furthered the emphasis of NEP 1986 were:
  - Educational Technology (ET) and
  - Computer Literacy and Studies in Schools (CLASS)
- In 1998, an IT task force created by the Prime Minister recommended introducing IT in the education sector.
- GyanDarshan was launched in 2000.
- A radio channel on education, GyanVani was launched in 2001
- Vidyavahini, a project to enable IT and IT-enabled education in 60000 schools in three years, was initiated in 2002.
- India's first dedicated education satellite called EduSat was launched in 2004.
- In 2005, the National Curriculum Framework was brought out by NCERT that recommended ICT inclusion across the curriculum of schools.
- 'ICT in Schools' Scheme was launched in 2004 and enhanced the ICT skills of secondary stage students.

Related Topics:

Evolution of India's Education Policy	Indian Education System
Samagra Shiksha Abhiyan	Sarva Shiksha Abhiyan (SSA)
Annual Status of Education Report (ASER)	School Education Quality Index (SEQI)

Before proceeding to further read about ICT in e-governance and its limitations, one must get acquainted with the IT-related topics for any clarity. Candidates can learn about Computer Knowledge from the link provided.

ICT in e-governance

Information and Communications Technology is a key aspect when it comes to e-governance. It has the potential to make life easy (or difficult) for the common populace if adapted in the right manner. For now, the below-mentioned information will focus on the limitations and the benefits of ICT in Governance.

Overview of ICT in Governance

Information and Communications Technologies play a key role in e-governance. Through a careful analysis of data, political, socio-economic decisions can be taken up by the government. Successful implementation of ICT will be a one-stop solution for most if not all of India's governance woes.

In India, e-Governance applications in the recent past have demonstrated their positive impact in minimizing the processing costs, increasing transparency and supporting economic development by income-generating ventures, increase in agricultural production, and improvements in health and education sectors, all of which promote the overall quality of life of the Indian people.

To know more about the significance of e-governance, visit the linked article

Limitations and Benefits of ICT in Governance

Limitations

The following are the limitations of ICT in Governance

- Such a shift in the bureaucratic culture may also meet with a similar response as the bureaucracy ever so reluctant to open up may create many hurdles to see that the power they wield over the information they control is not reduced by bringing it into the public domain through net.
- Besides this, openness and transparency in administration, which such activities attempt to achieve, would also be feared by those sections of employees who do not want to get exposed for their inefficiency.
- Another constraint is a paucity of funds as the case is with most of the public bodies in India. This exactly is the reason why such projects should be taken up as public-private initiatives, getting entrepreneurs to invest in them.
- A stand-alone computer serves no purpose and is an injustice to its inherent capacity. These computers talking subconsciously without any human intervention is the key to administrative reforms. It is also important that once the databases are readied and set, any further transaction be compulsorily routed through the database so that the database is routinely and sub-consciously updated and remains relevant and dynamic at all times.

Benefits

The benefits of ICT in Governance are as follows:

- Better transparency as it allows the public to be informed on government decision and policies

- The efficiency of the current system as it would have the same money and time. Better facilitation of communications between governments and businesses will be possible.
- Society is moving towards mobile connections and the ability of an e-government service to be accessible to citizens irrespective of location throughout the country brings the next and potentially biggest benefit of an e-government service as we live in what is now termed as the Knowledge era.

Conclusion

The bane of most government databases is that individual rather than systems drive it and hence, most of it is never updated once the individual departs. It is, therefore, essential that this process is ingrained into the departmental bloodstream and the transactions are invariably done through the database and updated without any conscious effort. Also, common databases for multiple departments need serious attention and promotion. There should be centralized maintenance of databases at various strategic levels. Last not the least; a strong political and administrative will is required to achieve this in fairly minimal time.