SUAN SUNANDHA
RAJABHAT UNIVERSITY

Week 6

Assisive Techonlogy (AT) and Inclusion

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Assisive Techonlogy (AT) and Inclusion

Inclusive classroom is an important part of equal opportunity in education. Demands for inclusive education have increased and fostered major changes to schooling and education.

Students with disabilities are educated alongside their peers within the local community therefore mainstream schools are required to adapt to accommodate a diverse group of students with a variety of needs.

Approaches to the inclusion of children and young people into mainstream classrooms, and the identification and recognition of special educational needs, is an integral part of daily school work.

The wellbeing and actualization of developmental and learning potential within a diverse student population is challenging. Digital literacy is considered as one of main enablers for the participation in the knowledge society and has to be provided based on the principal of equal opportunity.

The educational technology has an important role in facilitating digital literacy of students and teachers.

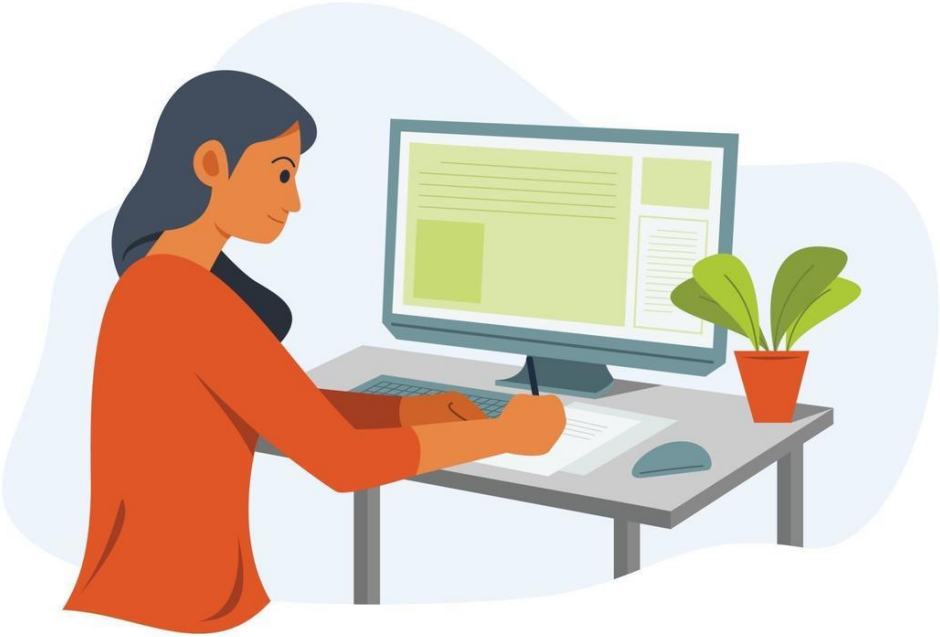
Within the renewal of the Educational Technology Curriculum, the ICT competences had been recognized as important in the process of the formation of teachers' professionalism which is based on autonomy, inquiry, creativity and innovation.

The changes in the student population of students with special needs such as students with disabilities and language issues are having a major impact on changing the learning goals, the teaching methods, and the means of assessment for all students.

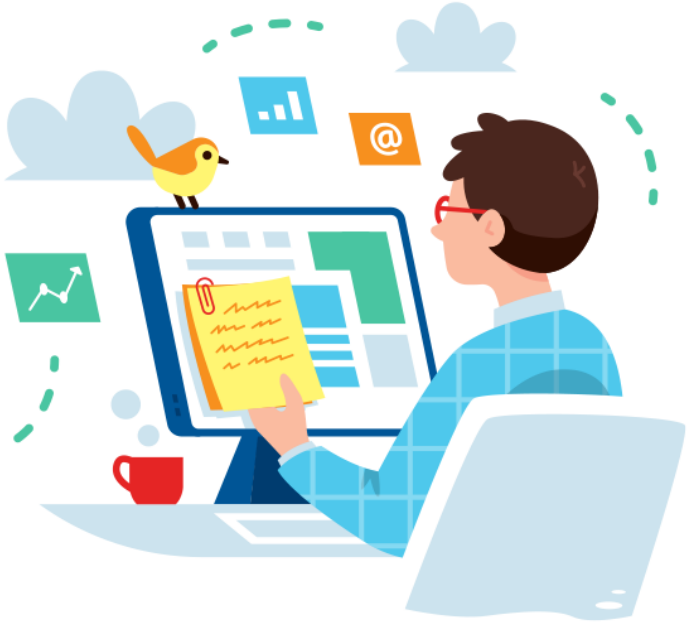
Teachers today, more than ever before, are teaching more students with special needs, such as students with physical or learning disability, emotional disabilities etc.

These teachers working with these populations are not just the special education or special English language acquisition teachers, instead more and more of these students are placed in the general student population with regular teachers.

Teacher preparation programs then need to ensure that teachers are educated in special needs pedagogy and assistive technologies as they relate to general education.

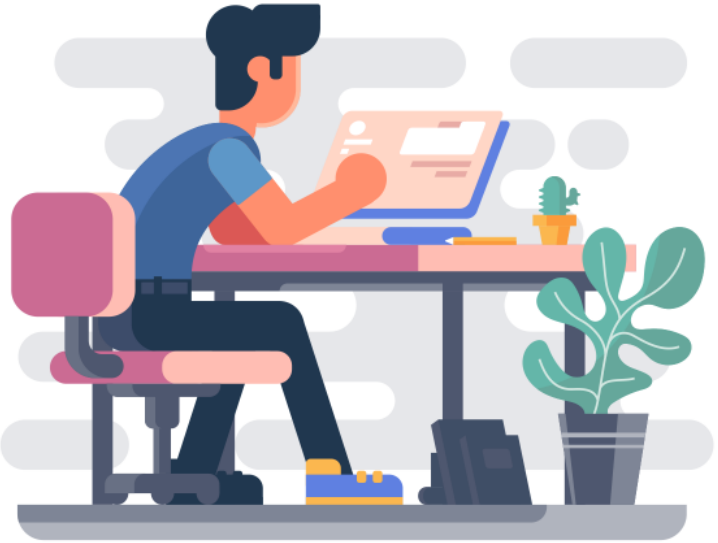


The educational environment needs to be designed or adapted for all students to have the opportunity for success, even those students who may need modifications and accommodations.



Assistive Technology (AT) devices can decrease students' isolation and allow them to become part of regular subject area classrooms.

Assistive technology then becomes a tool that provides a method for an individual who is experiencing a disability or other issue to still participate in a classroom.



The application of assistive technology in schools for students classified as having a disability is required through laws such as Individual with Disabilities Education Act (IDEA).

As the inclusive education of all students occurs more frequently within the standard classroom, then it becomes important that the knowledge/experience base for all teachers needs to be expanded to incorporate assistive technology approaches and accommodations.

Assistive Technology – Meaning and Nature

Assistive technology (AT) means any piece of technology that helps a student with or without a disability to increase or maintain his/her level of functioning.

These often include laptops with specialized programs, like speech to text, text to speech, graphic organizers and word prediction software.

Assistive technology device means any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of a child with a disability.

Assistive Technology helps people with a various range of cognitive/ learning, and physical disabilities, be it in the home, classroom, workplace and/or community.

Assistive Technology is enabling all individuals, of all ages, including those with disabilities, to be more independent, self-confident, productive and better included in every day life, education, employment and living. A list of digital assistive technology is given in the graphics.

Nature of Assistive Technology

- AT compensates for a student's skills deficits, needs and/or area(s) of disability.
- AT is used to lessen or remove barriers faced by persons with disabilities.

- AT refers to both high- and low-tech tools that allow people of all ages to be more independent self-confident, productive and better included in every day life, education, employment and living.

AT offers a wide range of equipment to support participation and learning.

- Improve the speed and accuracy of students' work.
- Reinforce effective classroom instruction and strengthen skill development of students with learning disabilities.

- Help students to 'fit in' with classroom learning and routines

- Motivate students with LDs to set high goals for themselves and to persevere

Types of Digital Assistive Technology

It is important to understand that not all technologies are appropriate for all individuals.

People have their own unique set of strengths, weaknesses, interests, experiences and special abilities. Therefore, a technology that may be a blessing for one person may be useless for another.

Similarly, a technology that is appropriate for one purpose in a particular setting may be of little value in another situation. So, when choosing an assistive technology, consider the specific individual, the setting and the task(s) to be performed.

Low-tech Assistive Technology: Pencil grips, Graph paper, Highlighting pens, Planners, Audio books, Digital clocks and Calculators, Erasable pens, Coloured coding systems and overlays, Tactile and Manipulative learning products and Tape.

Mid to Hi-tech Assistive Technology :

- Digital recorders
- Digital books
- Graphing calculators
- Electronic math worksheets
- Graphing calculators
- Portable or adapted keyboards

- Mobile technology, e.g. tablets, iPods, iPads, smartphones, MP3 players, etc.

- Reading systems that utilize a computer, scanner, and software to "read" scanned book pages out loud, e.g. Kurzweil

- Speech recognition software that allows a computer to operate by speaking to it, e.g. Siri

- Speech recognition system that turn oral language into written text, e.g. Dragonj

- Software that predicts and edits words for students who struggle with spelling, e.g. WordQ

- "Talking" calculators that assist students with math challenges

- Mind mapping / outlining software
- Global Positioning System (GPS)

Choosing of AT

From the developmental point of view, the early manipulation of objects and use of tools are of particular importance The possibility of a cognitive impairment must be taken into account when evaluating the user's level of cognitive functioning: careful attention should be given to the evaluation of the cognitive demands that the AT device places on the person.

Motivation is very important to support an effective use of AT, for this reason the goals of the potential user should be carefully defined, so that the device application can become meaningful and motivating to the person.

AT is to be successfully used by the end-user when it is appropriate:

- Effectiveness or how well the technology enhances the user's capability
- Affordability or how much it costs to purchase, maintain, and repair
- Operability or how easy the technology is to employ
- Dependability or how long the technology operates without reduced performance or breakdown

Universal Design for Learning (UDL) and Inclusion

The origin of the term Universal Design for Learning (UDL) is generally attributed to David Rose, Anne Meyer, and colleagues at the Center for Applied Special Technology (CAST).

Rose and Meyer (2002) reveal the basis of UDL is grounded in emerging insights about brain development, learning, and digital media.

They observed the disconnect between an increasingly diverse student population and a "one–size–fits all" curriculum would not produce the academic achievement gains that were being sought.

Drawing on the historical application of universal design in architectural (e.g., curb cuts), CAST advanced the concept of universal design for learning as a means of focusing research, development, and educational practice on understanding diversity and applying technology to facilitate learning.

CAST's philosophy of UDL is embodied in a series of principles that serve as the core components of UDL:

- Multiple means of representation to give learners various ways of acquiring information and knowledge

- Multiple means of expression to provide learners alternatives for demonstrating what they know
- Multiple means of engagement to tap into learners' interests, challenge them appropriately, and motivate them to learn.

The term "universal design" means a concept or philosophy for designing and delivering products and services that are usable by people with the widest possible range of functional capabilities, which include products and services that are directly usable (without requiring assistive technologies) and products and services that are made usable with assistive technologies.

Advantages and Limitations of AT

Advantages of AT

Assistive technology can help to support and enable people with memory problems including Alzheimer's disease and other forms of dementia to live more independently.

For example, assistive technology and telecare can help to :

- Remind the persons to take their tablets at the right time.
- Help locate a lost item.
- Orientate the person that it is day time or night time.

- Assist the person to phone a relative or friend using preprogrammed numbers or pictures.
- Switch on the lights automatically if the person gets up at night time.

- Switch off the gas automatically if it has been left unlit.
- Alert a career or monitoring centre that the person needs assistance.

Assistive technology may also help to support and reassure careers. For example, it may free careers to spend better quality time with the person.

Or it may enable a career to get a good nights rest, knowing that if the person gets up at night they will be alerted.

Limitations of AT

Assistive technology may not be the answer for everybody. People have different additional career support or services rather than using technology at all.

If assistive technology does not meet the individual needs and preferences of the person it may be ineffective or may even cause additional confusion or distress.

For example, assistive technology and telecare may not be the answer if:

- the person switches off or unplugs the equipment
- the person is confused or distressed by any alarm sounds or recorded messages
- there are insufficient careers or care workers to respond to an alert.

Assistive technology on its own cannot provide human contact and personal care. Many older people experience loneliness and social isolation.

Technology should only be provided as an addition to contact and care, not as a replacement.

Check Your Progress–4

Question

1. AT is the abbreviation of

Answers

Option 1	a)	Assisted Teaching
Option 2	b)	Assistive Technology
Option 3	c)	Assistive Teaching
Option 4	d)	Assisted Technique

Question

2. Dragon is the example of

Answers

Option 1 a) Speech recognition software that allows a computer to operate by speaking to it.

Option 2 b) “Talking” calculators that assist students with math challenges

Option 3 c) Speech recognition system that turn oral language into written text

Option 4 d) Mind mapping/outlining software

Question

3. The term 'universal design' includes

Answers

Option 1 a) Designing and delivering products and services that are usable by people.

Option 2 b) Products and services that are directly usable

Option 3 c) Products and services that are made usable with assistive technologies.

Option 4 d) All the above

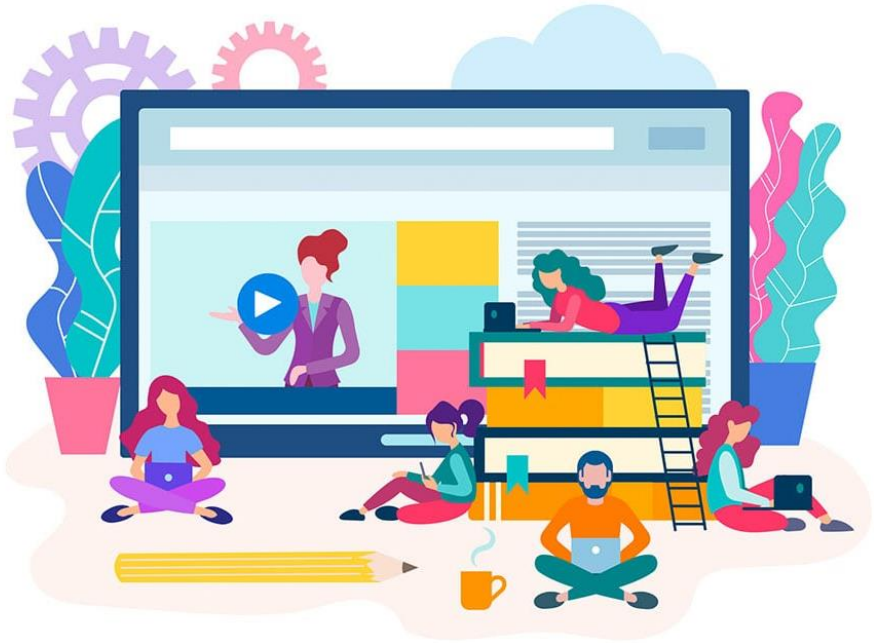
It considers ICT Infrastructure as an organization, with a great number of elements, with persons that interact with these elements and with other persons, with complex processes, with a great number of procedures, etc.

This infrastructure should interact with its environment, should adapt to it and should evolve. With this vision we have to consider the ICT infrastructure as a complex system.

Automated and ICT Managed School Processes

School will adopt or adapt an e-governance and automated school administration programme for schools, build capacities for its implementation and deploy school based Management Information Systems (MIS).

These MIS will be integrated with the proposed state wide web based School Education Management Information System.

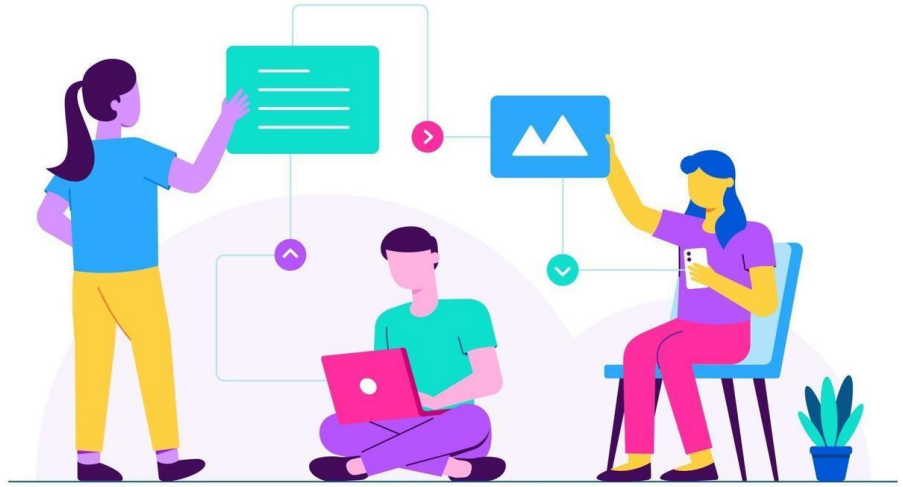


A school wide local area network enables automation of a variety of processes. Beginning with library automation, locally cached offline access to internet resources, office automation, maintenance of records, student tracking, resource planning, using the existing ICT infrastructure will increase efficiencies.

At the same time, savings in cost, time and effort will also accrue. The school wide local area network will be used to facilitate this automation.

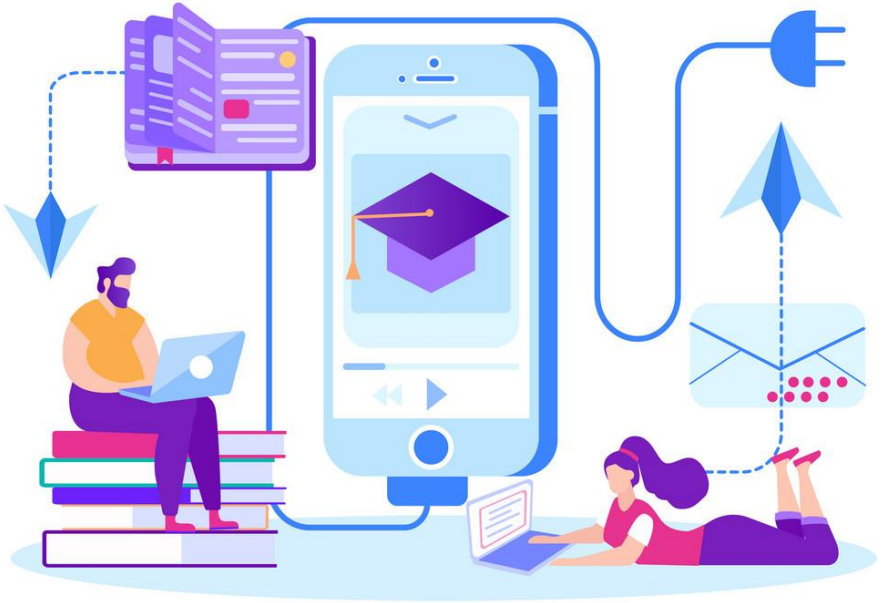
10.5.2 School Management Information System

- A nation wide network will be established in which schools, teachers, students, school managers, and the community at large participate.



This implementation will include the School Management Information Systems (School MIS); digital repositories of tools, content and resources; professional development and continuing education platforms; and guidance, counselling and other student support services.

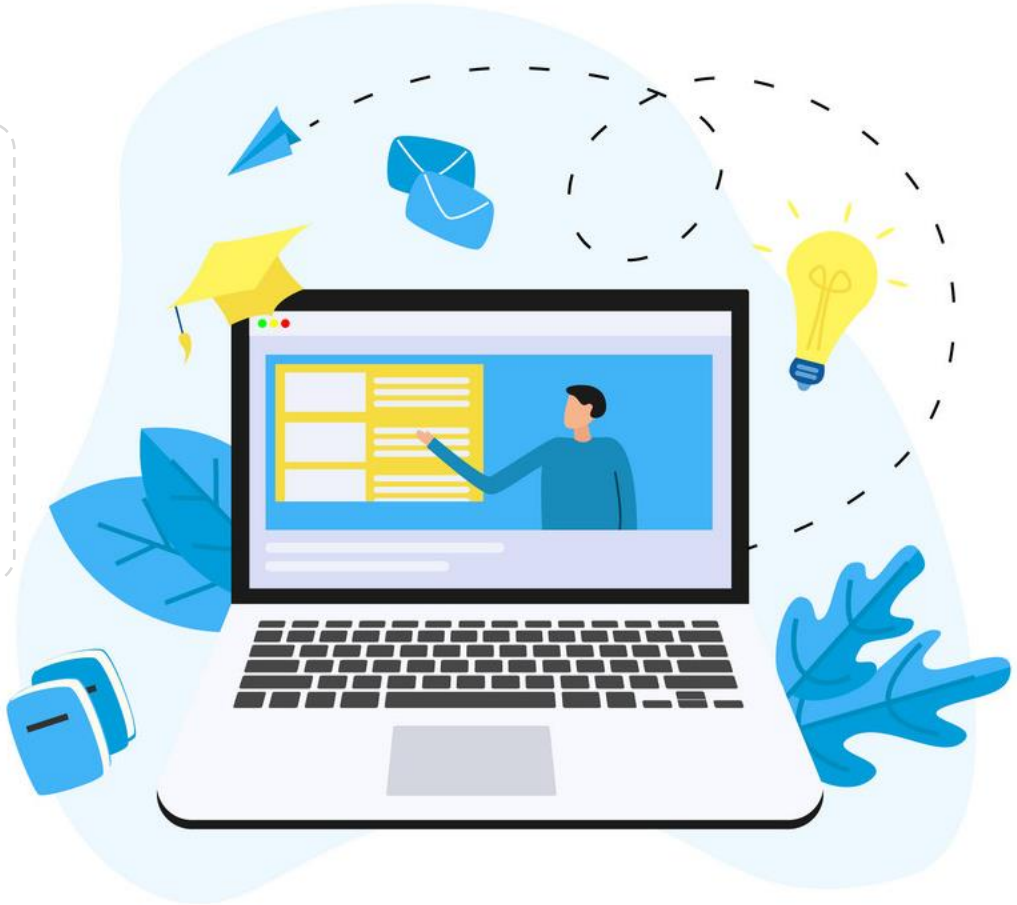
- School MIS will emerge as a single window clearing house on all information related to the secondary school system. The information will facilitate research and analysis activities and guide decision making at different levels in the education system, contributing to enhanced efficiencies.



- The scope of information to be collated by the MIS will be broad and include student and teacher tracking, particularly for their academic needs.

  The norms will also define standards of technology including language fonts, word processors, technical dictionaries, etc.

Open standards facilitating universal access to information, content and resources will be ensured.



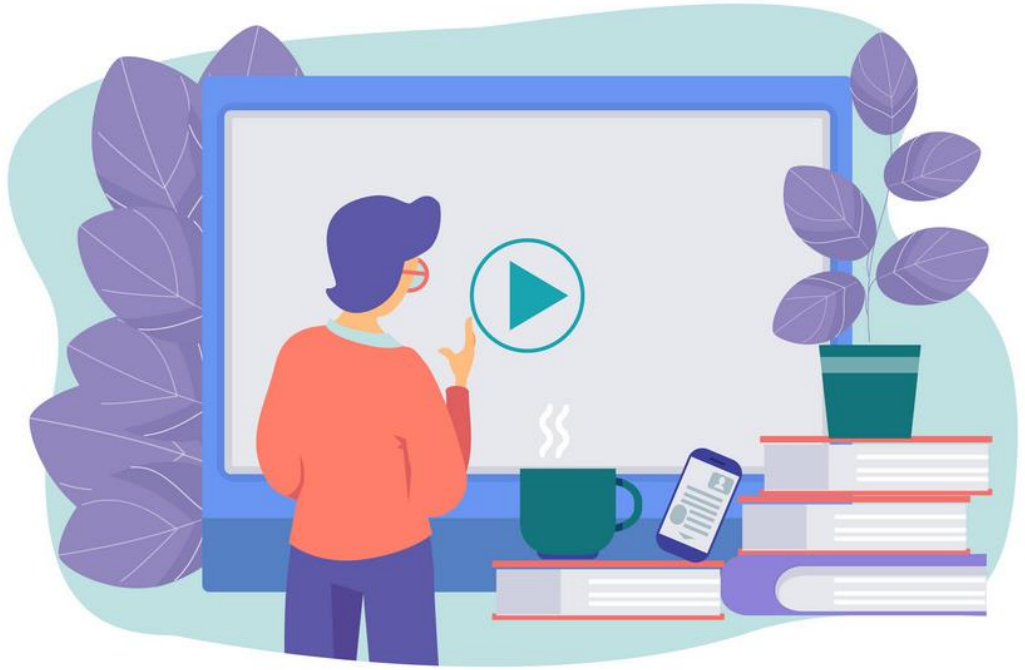
LET US SUM-UP

- School record keeping is all about information collection, storage, retrieval, use, transmission, manipulation and dissemination for the purpose of enriching communication, decision-making and problem solving ability in the school system.

- Using ICT in keeping school records helps to facilitate and enhance the administration of the school towards achieving the goals.
- Role of ICT in keeping school records includes the fact that school records tell the history of the school. Google Calendar can schedule meetings and events with your co-workers, just as old calendar application.

- ICT plays a vital role in supporting powerful, efficient management and administration, It is specified that technology can be used right from communication, student administration to various resource administration in an education institution

- Technology provides increase of quick and frequent communication between teachers and parents, much more than can be accomplished through conventional means.



- Assistive Technology (AT) means any piece of technology that helps a student with or without a disability to increase or maintain his/her level of functioning; these often include laptops with specialized programs, like speech to text, text to speech, graphic organizers and word prediction software.

- Schools need to ensure that ICT is used to support students with special educational needs in the most effective and appropriate way.

  Schools need to ensure that they match students' needs to the most appropriate technology available, and that ICT is used to support not only the acquisition of literacy but the widest range of students' needs.

- The term UDL emphasizes the special purpose of learning environments. They are not created to provide information or shelter but to support and foster the changes in knowledge and skills that we call learning.

- School MIS will emerge as a single window clearing house on all information related to the secondary school system.

UNIT END EXERCISES

1. What roles can ICT play in the administration of schools?
2. Justify the need for Assistive Technology for Inclusion
3. List the different types of assistive technology
4. Prepare ICT infrastructure plan for the school


Q&A