Unit 8 :- Information and Communication Technology - ICT.

Topic: Strengths and limitations of ICTs application in livestock sector and farmers capacity building. Information kiosk, E-learning, CAD, virtual class room, virtual reality, multi-media etc. Cyber extension- problems and prospects in livestock extension. Computer networking: LAN, MAN, WAN, Internet, tele-conferencing, tele-text, radio-text, video-text, interactive cable distribution system, satellite communication, internet, www etc.

ICT application in Livestock sector

Information and Communication Technologies (ICTs) can be broadly defined as the means of creation, storage, management and dissemination of information by electronic means.

The ICT sector as a whole (telecommunication, broadcasting, computer hardware and software related technologies) has emerged as a strategically important sector driving social and economic change in India.

ICTs are those technologies that enable the handling of information and facilitate different forms of communication. These include:

- Capturing technologies (camcorders)
- Storage technologies (CD-ROMs, DVDs, Pen drives, etc)
- Processing technologies (application software)
- Communication technologies (local area networks)
- Display technologies (computer monitors, LCDs)

ICTs include old (radio, television) and new technologies (internets, information kiosks, mobiles) that facilitate the storage and transfer of information. This distinction may also be not appropriate as radio, television, satellite technologies and the internet are being combined in innovative ways. Browsing the web on television or from a cell phone, making phone call from computer, seeing an unfinished movie in a TV in the cell phone, SMS are indications of these convergence trends.

Strengths or Advantages of ICT in Livestock sector :

1. Maintain owner and animal in Smart card.
2. Artificial Insemination Management - Personal Digital Assistance

3. Inform the Animal owner the expected next heat of the animal and the same system can be used to plan the rounds of the Inseminator for Insemination. (Reduced the no of missed heat)
4. Enabling the monitoring of fertility at various levels such as village and block level.
5. Helps AI technicians, Milk Recorders. Veterinarians in registration of - AI, PD, Calving, Yield measurement, milk sample collection, Feed and Fodder sample collection, Diagnosis, Treatment, Testing etc.
6. Mobiles: Farmers SMS - alert messages, communication media among all farmers in a locality.
7. Vet calculator - Different calculation including Drug doses, Fluid and energy requirements, Balanced ration, area specific mineral mixture calculation.
8. Call a vet in Emergency.
9. Wild animal geo tracking by Tagging them.

Other Advantages-

- Resource sharing
- Flexibility
- Reliability
- Faster speed
- Cheaper cost
- Creation of jobs
- Develops Communication
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Limitation of ICT :

- Lack of Business human contact
- Lack of Direct Team work
- Required great self discipline
- Lack of security/privacy
- Unemployment
- cyber bulling

Information Kiosk

An Information kiosk is a computer terminal featuring specialized hardware and software designed within a public exhibit that provides access to information and applications for communication, commerce, entertainment, and education.

Types of kiosks :

Tele kiosk

The tele kiosk can be considered the technical successor to the telephone booth, a publicly accessible set of devices that are used for communication. These can include email, fax, SMS, as well as standard telephone service.

Financial services kiosk

The financial services kiosk can provide the ability for customers to perform transactions that may normally require a bank teller and may be more complex and longer to perform than desired at an ATM.

Internet kiosk

An Internet kiosk is a terminal that provides public Internet access. Internet kiosks sometimes resemble telephone booths, and are typically placed in settings such as government offices, veterinary dispensaries, panchayats, for fast access toe-mail or web pages. Internet kiosks sometimes have a bill acceptor or a credit card swipe, and nearly always have a computer keyboard, a mouse and a monitor.

Visitor management and security kiosk

A visitor management and security kiosk can facilitate the visitor check in process at businesses, schools, and other controlled access environments.

Points to be considered in the design of a kiosk

- The aesthetic and functional design of interactive kiosks is a key element that drives user adoption, overall usage time and affordability.
- Aesthetic design: The design of the enclosure is often the driving factor in user adoption.
- Graphic messaging: Plays a key role in communicating with potential users.
- Maintenance and thermal design: Critical in order to maximize up-time (the time between failures or crashes).
- Component specification: Typical components include touch-screen, P.C., pointing device, keyboard, bill acceptor, mag-stripe and/ or bar-code scanner, surge protector, UPS etc.
- Ergonomic: Is important to ensure comfortable and easy user accessibility.
- Interface design: Designing for information kiosks typically requires larger buttons and simpler decision trees than designing for a web or computer based interactive. Catchy attractive animations and short dwell times are important.

E-Learning

E-learning is the effective learning process created by combining digitally delivered content with learning support services.

E-learning consists of the transfer of skills and knowledge using electronic applications and processes. This may include Web-based learning, computer-based learning, virtual classrooms, and digital collaboration, use of audio or video recording, satellite or land-based broadcasts, CDROM, and even the phone system.

E-Learning can be broadly defined as use of any electronic technology to create learning experiences.

Types of e-learning :

Learner-led e-learning

Learner-led e-learning also called stand-alone or self-directed e-learning consist of the delivery of learning experiences to independent learners. The learners then lead/manage their own learning. Content may consist of web pages,multimedia presentations, and computer applications; however, the majority of e-learning now makes use of the web.

Facilitated e-learning

Facilitated e-learning makes use of the capabilities of Learner-led e-learning and add the benefit of having an instructor guiding the learner. This require the use of e-mail, discussion forums, and chat capabilities depending on whether communication will be synchronous or entirely asynchronous.

Instructor-led e-learning

Instructor-led e-learning makes use of technology to deliver traditional classes real-time. This is done via the use of teleconferencing, audio conferencing, chat, audio graphic systems (screen-sharing and whiteboards), or even via the telephone.

Advantages of e-learning

1. Accommodate multiple learning styles through the use of media, text and even live technology mediated interactions.
2. Offer individualized instruction through assessment and remediation addressing the learners' needs.
3. Provide self-paced instruction for learners wanting to move ahead or learners wanting extra practice.
4. Offer on-demand access to learning when needed. The learner determines when he/she wants to learn.
5. Allow collaborative learning so learners do not feel isolated and maximize learning.

6. Engages users with stimulating content and interactivity that teaches and reinforces.
7. Increase retention by using reinforcers more consistently than other approaches.
8. Increase consistency when the learning is captured and delivered by technology.
9. Reduce learning time
10. Track learners and provide proof of their work and skill development.

Limitations of e-learning

- High initial investment

  E-learning is a capital intensive endeavor and its costs are often underestimated.
- Reduced face to face interactions

  E-learning can be isolating if care is not taken to balance the learning modalities. While adult learners can often adapt, young or traditional age learners should have a balanced learning approach with enough interaction.
- Dependency on technology

  Technology can be a blessing or a curse as it requires resourced, a certain know-how from the learner, and maintenance.
- Inappropriate match of technology, content, objectives, and approach

  Appropriate instruction requires a four way match between the technology, the nature of the content and how it is presented, the objectives that must lend themselves to the medium, and the approach taken to produce learning. If any of these fails e-Learning is suboptimal.

CAD (computer-aided design)

computer-aided design and drafting (CADD), is technology for design and technical documentation, which replaces manual drafting with an automated process. CAD is mainly used for detailed engineering of 3D models or 2D drawings of physical components, but it is also used throughout the engineering process from conceptual design and layout of products. Example of CAD software is AutoCAD.

Virtual Classroom Introduction

Definition: Virtual classrooms are teaching and learning environments located within computer-mediated communication systems that support collaborative learning among

students, enabling participation at their own time, place and pace - these electronic virtual environments are meant to supplement or replace the physical class environment in support of classroom-like experiences.

"Virtual" is used here to characterize the fact that the course is not taught in a classroom face-to-face but through some substitute mode that can be associated with classroom teaching, which means people do not have to go to the real class to learn.

A virtual classroom enables to bring learners from around the world together online in highly interactive virtual classes while greatly reducing the travel, time, and expense of on-site teaching/training programs. It can be used as a solution for live delivery and interaction that addresses the entire process of creating and managing our teaching-learning process. It facilitates instructor and student in teaching-learning events, such as a seminar, online discussion or a live training for employees in company. As in traditional classroom, there are professor and fellow learners present with the student; we have many participants present in virtual classroom. They can talk with each other as in the traditional classroom via chat. Similarly presenter uses whiteboard, gives notes/resources, gives presentation as given in traditional one. Thus, virtual classroom can be visualized as a classroom where a lecture or session is conducted using Internet.

Characteristics Features of Virtual Classrooms

1. It facilitates self learning at the learner's convenient time and place.
2. Electronic publication is cheaper and faster.
3. It facilitates faster and cheaper delivery of the material.
4. It promotes better teacher-student interactivity.
5. It enables to update learning materials speedily.

Advantages of Virtual Classroom

Following are some of the advantages of virtual classroom over traditional classroom model

1. *Removal of geographical barriers (Anywhere learning)* : A virtual classroom allows learners and teachers to attend a single live training session from any place in the world, provided they have a computer and Internet connection.

2. *Sessions can be recorded :* If learners miss a traditional classroom-based training session, they have very little opportunity to engage in the learning experience that took place. A virtual classroom has a facility to record the session so learners or teachers can replay it afterwards. Teachers too get an opportunity to review their own or their colleagues' performance.
3. *Quicker to organize* : Training can be organized more quickly than traditional classroom-based training. Classrooms and projectors do not need to be reserved, materials do not need to be distributed. The sessions are easier to schedule or reschedule since attendees will not be traveling to the venue of the session.
4. *One to one communication* : In a virtual classroom environment, learners can talk to the teacher and to each other, and although this communication is not as rich in a traditional classroom, it still can help learners, since it is one to one.

Limitations of Virtual Classroom

Following are some of the limitations of virtual classroom over traditional classroom

1. *Teachers and students need to become familiar with the tools* : Teachers and students are familiar with the workings of a traditional classroom, that is, they understand the concepts of hand raising, the whiteboard, assignments, and so forth. With a virtual classroom, all attendees must become familiar with the way the virtual classroom works before virtual classroom based training starts.
2. *Time dependency for live sessions* : Attending virtual classroom training is restricted to a certain scheduled time.
3. *Infrastructure for the participants PC needs to be prepared* : Virtual classroom sessions need to be scheduled, teachers need to be invited, and participants' PCs need to be prepared.
4. *Technical limitations* : Technical issues such as bandwidth, speed of the connection or power failure may create problem while presentation is going on.

Virtual Reality (VR)

It refers to a computer-generated simulation in which a person can interact within an artificial three-dimensional environment using electronic devices, such as special goggles with a screen or gloves fitted with sensors. Games, surgery, flight simulators, military training are the most well known uses of virtual reality but other, lesser well

known applications include: Visualizations, e.g. geographical Study, Weather forecasting etc.

Multimedia

It is a form of communication that combines different content forms such as text, audio, images, animations, or video into a single presentation, in contrast to traditional mass media, such as printed material or audio recordings. Popular examples of multimedia include video podcasts, audio slideshows, animated shows, and movies.

Cyber Extension

Cyber extension means using the power of online networks, computer communications and digital interactive multimedia to facilitate dissemination of Livestock Technology or many other fields.

Problems of Cyber Extension:

- Lack of Infrastructure in Rural areas.
- Power supply problem.
- Lack of ICT trained manpower.
- Lack of content in local language.

Livestock Extension

It is the process to carrying the technology of Scientific Livestock Practices to the Farmer in order to enable him to utilize the knowledge for a better economy.

Computer Networking

A computer network is a collection of interconnected computers that are equipped to exchange information and share resources with each other.

Computer networking is classified in 3 major types are LAN, MAN and WAN.

A **LAN** (local area network) is a group of computers and network devices connected together, usually within the same building. By definition, the connections must be high speed and relatively inexpensive. A LAN can span an area of about a kilometer in radius. Computer in office, building or in a School are usually connected through LAN. It mostly built by Ethernet Cables.

A **MAN** (metropolitan area network) is a larger network that usually spans several buildings in the same city or town. The cable television network that is available in many cities is an example of MAN. A MAN can cover a area of a few hundred kilometers in radius.

A **WAN** (wide area network), in comparison to a MAN, is not restricted to a geographical location, although it might be confined within the bounds of a state or country. A WAN connects several LANs, and may be limited to an enterprise (a corporation or an organization) or accessible to the public. The technology is high speed and relatively expensive. The Internet is an example of a worldwide public WAN.

The Internet

It is the global system of interconnected computer networks that uses the Internet protocol suite (TCP/IP) to communicate between networks and devices. It is a network of networks that consists of private, public, academic, business, and government networks of local to global scope, linked by a broad array of electronic, wireless, and optical networking technologies.

Teleconferencing

means meeting through a telecommunications medium. It may be audio conferencing and video conferencing.

Tele Text

It is a service that provides news and other information in written form on television.

Radio Text

This feature allows a broadcaster to send message that could scroll across your radio's display, things like sports scores, song titles, artist or album names, even advertisements.

Video Text

It is any system that provides interactive content and displays it on a video monitor such as a television, typically using modems to send data in both directions. Videotext in its broader definition can be used to refer to any such service, including the Internet, bulletin board systems, online service providers, and even the arrival/departure displays at an airport.

Satellite communication

In telecommunications, the use of artificial satellites to provide communication links between various points on Earth. Satellite communications play a vital role in the global telecommunications system. Satellites communicate by using radio waves to send signals to the antennas on the Earth. The antennas then capture those signals and process the information coming from those signals.

World Wide Web (WWW)

It is a system of interlinked pages that contain a variety of information which can be accessed via the internet by the people all over the world. Web browsers are needed for accessing it.