

TCT 201: INSTRUCTIONAL TECHNOLOGY

Topic: Instructional Media

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3. Electronic Media

- Electronic media fall into the following categories i.e.
 - Audio media
 - Visual media
 - Audio-visual media
 - Computer-based instructional media

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a) Audio media

- These are teaching-learning devices that appeal to the auditory sense
- They consist of:
 - Radio sets
 - Audio recording machines such as audiotapes
 - disc machines
 - telephone
 - walkie-talkie.

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a) Audio media

- **Advantages of Audio Media are:**
 - Widely available
 - May be especially beneficial to visually-impaired, low literate learners
 - May be listened to repeatedly
 - Most forms practical, cheap, small, portable

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a) Audio media

- **Disadvantages of Audio Media are:**
 - Relies only on sense of hearing
 - Some forms may be expensive
 - Lack of opportunity for interaction between instructor and learner

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a) Audio media

i. The Radio

- Radio is a device with which the whole mass can be contacted at a time, efficiently and economically
- Radio is a popular, pleasing and a fast medium. However, it cannot be used to convey heavy, detailed knowledge.

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a) Audio media

Uses of Radio

- Announcements - meetings, demonstrations etc
- Advertisements regarding availability of material, prices, places etc
- Warnings-relating to weather, outbreaks of diseases
- News reviews-about farmers etc
- Interviews
- Questions & Answers
- Short talks
- Play, skits, etc
- Features and Documentaries

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a) Audio media

Advantages of using Radio as an instructional media

- In-expensiveness
- Easy availability
- A radio leaps barrier of time and space
- Upto-datedness and Immediate
- Emotional Impact
- Can bring realism
- It can reach more people more quickly than any other means of communication
- It can reach illiterates
- It is portable.

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a) Audio media

Disadvantages of using Radio

- It is a one way communication and audience reaction is not known immediately
- It requires concentrated attention of the listeners as only aural sense is used
- Time-the learners have to adjust their time to the particular programme timing
- Pre-rehearsing is not possible
- Radio set should be in a working condition
- Frequently loses out in competition with entertainment

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a) Audio media

- In Kenya most of the radio stations air educational programs through radio such as:
 - KICD Edu Channel - <https://kicd.ac.ke/wp-content/uploads/2018/01/KICD-radio-timetable-2018C.pdf>

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a) Audio media

2. Tape Recorders

- Tape recorders have become very common, however, with the advent of other digital media, their use in education is gradually decreasing
- Tape recording, especially cassette tape recordings may be prepared for group or individual learning.

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a) Audio media



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a) Audio media

Features to look for in a tape-recorder

- **Simplicity:** It should be easy to operate
- **Portable:** The recording equipment should be as light as possible
- **Cost:** the amount of money available should be carefully considered before buying the equipment
- **Speed:** The higher the speed used, the better will be the quality
- **Size of the Tape reels:** Different machine will use different sizes

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a) Audio media

- **Frequency Range:** For high dependable recording, the frequency range of the equipment should be similar to the frequency range of the sounds in the programme.

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a) Audio media

Advantages of Tape Records

- Pre-rehearsing is possible
- Information can be stored & used repeatedly
- No problem of time – can be used at any time
- Communicator can present programme made by himself
- It can facilitate editing also, i.e. shortening, eliminating or adding of materials from different sources.

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a) Audio media

Disadvantages

- Many or may not be uptodate
- More expensive
- One way communication.

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b) VISUAL MEDIA

- These are instructional media that appeal to the sense of seeing (eyes)
- Most graphics are in this family of instructional media
- They include: pictures, photographs, diagrams, charts and cartoons, still pictures such as slides, filmstrips and transparencies.

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c) AUDIO-VISUAL

- These are instructional media that have the capacity to provide issues in form of pictures and audio effect, in form of commentaries on the pictures simultaneously.
- Examples of media in this category are: the television, videotape player, filmstrip/slides with in-built or synchronized sound.
- Example:
<https://www.youtube.com/watch?v=DjmLoxkeMPg>

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c) AUDIO-VISUAL

The Television

- Television is the most powerful medium of mass communication which has ever existed and it has revolutionized our lives in many ways
- Television shows the actual picture, figure or diagram along with the hearing sound
- It has an advantage over radio where the audience is only listening.
- The movement of the pictures hold the attention of the audience.

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c) AUDIO-VISUAL

Advantages

- T.V can be used to broaden and enrich the experience of the audience
- It can create a genuine interest in a subject or topic which then gives the teacher something on which he can build
- If a scientific experiment is mentioned, then it can be shown
- It overcomes the barrier of time and space and to some extent of the language due to its visual effects

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c) AUDIO-VISUAL

Evaluating the T.V Programme

- Was the purpose of the presentation made clear to both audience and teacher?
- Did the audience have something to watch for?
- Was the audience prepared for the telecast by reading?
- Did the audience understand the material?
- Did the receiver/audience find the presentation interesting?
- Was the programme well organised ?

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c) AUDIO-VISUAL

- Was opportunity given to become involved, to participate?
- Were the key points emphasized by means of repetition and review?
- Did the telecast add certain experiences not easily available in the usual classroom situation or day-to-day life?

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Challenges of Using Radio and Television

- Commercialization
- Lack of guidelines on programming
- Language
- Technology

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d) Computer-based Instructional Media

- Computer-based instructional media is categorized into two:
 - Asynchronous:** Pre-programmed and available to the trainee at any time and from any location e.g. online course or multimedia programs
 - Synchronous:** Live and requires trainees to be at their computer at a specific time e.g. Teleconferencing, Online chatting, etc

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Characteristics of Computer-based Instructional Media

- i. **Self-Paced** - This unique characteristic enables learners to move as slowly or as quickly as they like. Material included in the program can be reviewed again and again, as many times as the students require, without any consequences or set backs from the program
- ii. **Self-Directed** - This describes the ability of learners to decide what they want to learn, and in what order they want to learn it, based on their unique learning abilities and characteristics, in order to benefit, enhance, and individualize the learning process for students.

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Characteristics of Computer-based Instructional Media

- iii. **Use of Various Senses** - Computer assisted Instruction (CAI) uses computers and various forms of technology that allow students to process instructional material using a variety of different senses making it easier for students to remember and learn the material
- iv. **Variety of Media** - The utilization of technology and computers by this strategy encourages student learning by providing a constantly stimulating environment and promotes enthusiasm by presenting academic content in a way that is interactive, enjoyable and relatable for students.

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d) Computer-based Instructional Media

- i. **Asynchronous computer-based instructional media**
 - This refers to the various forms of digital and online learning in which students learn from instructional media such as prerecorded video lessons or game-based learning tasks that students complete on their own and that is not being delivered in person or in real time.
 - Examples of technologies used in asynchronous instruction include: E-learning portals, CD-ROM-based instruction, Mobile learning – M-Learning, recorded webcasts and podcasts and discussion boards, blogs, Email, etc

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d) Computer-based Instructional Media

a) **E-learning Portal** – The use of computer network technology such as the intranet or Internet to deliver information or instruction to individuals. E-learning portal refers to a gateway to courses, resources and instruments that facilitate teaching and learning. Technically, it's a website that acts as a repository for teaching and learning materials. It's a place where you store all your documents, podcasts, videos, presentations, and so on. Example: UoN portal - <https://multimedia.uonbi.ac.ke/>

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d) Computer-based Instructional Media

b) **CD-ROM Based Instruction** – This is where learning content in text, graphics/images/picture, video, audio and multimedia content is presented to the learner in removable storage media such as CD-ROM, DVD, hard-disks, Flash-disks, etc.

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d) Computer-based Instructional Media

c) **M-Learning** – Instructional content is availed to the learner via the Internet or network using personal mobile devices, such as tablets and smartphones, laptops, PDAs, etc. It is flexible, allowing students access to education anywhere, anytime

d) **Webcasts** – A webcast is a media presentation distributed over the Internet using streaming media technology to distribute a single content source to many simultaneous listeners/viewers. A webcast may either be distributed live or on demand. Essentially, webcasting is "broadcasting" over the Internet.

e) Podcasts

f) Blogs

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d) Computer-based Instructional Media

e) Podcasts - Also referred to as Netcast. It refers to an episodic series of digital audio or video files which a user can download in order to listen to. It is often available for subscription, so that new episodes are automatically downloaded via web syndication to the user's own local computer, mobile application, or portable media players. Click to view an example of a podcast: <https://www.bbc.co.uk/programmes/p04b1g3c/episodes/downloads>

f) Blogs

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d) Computer-based Instructional Media

f) Edublogs - is a blog (Web-log) created for educational purposes. Edublogs archive and support student and teacher learning by facilitating reflection, questioning by self and others, collaboration and by providing contexts for engaging in higher-order thinking

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d) Computer-based Instructional Media

f) **Electronic simulation** – Device or system that replicates or imitates the real device or system. An instructional simulation, also called an educational simulation, is a simulation of some type of reality (system or environment) but which also includes instructional elements that help a learner explore, navigate or obtain more information about that system or environment that cannot generally be acquired from mere experimentation. It is similar to Virtual Reality (VR).

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d) Computer-based Instructional Media

ii. Synchronous Computer-based instructional media

- Synchronous activities occur concurrently between two or more users including such real-time applications as chat rooms or instant messaging which allow users to interact simultaneously through text, audio, and video with other users located anywhere in the world
- Synchronous learning refers to a learning event in which a group of students are engaging in learning at the same time – in real time
- Examples of technologies that support synchronous learning are.

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d) Computer-based Instructional Media

- This kind of learning tool is real-time.
- Synchronous learning technologies/platforms provide virtual classroom/s which allows students to ask, and teachers to answer questions instantly, through instant messaging, which is why it is called synchronous.
- Rather than taking lessons alone, students associating themselves with synchronous e-learning software or online courses can easily interact with fellow students and their teachers during the course

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- Examples of technologies that support synchronous learning are: Teleconferencing, online chatting, Video conferencing, Web 2.0 technologies e.g. Social media/social networking sites, live interactive radio/TV programs, etc

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d) Computer-based Instructional Media

- a) Teleconferencing – also referred to as **teleseminar** is the live exchange and mass articulation of information among several persons and machines remote from one another but linked by a telecommunications system. Terms such as audio conferencing, telephone conferencing and phone conferencing are also sometimes used to refer to teleconferencing.

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d) Computer-based Instructional Media

b) Video conferencing

- Video conference refers to a two way, real-time transmission of audio and video signals between specialized devices or computers at two or more locations via satellite (wireless) over a network such as a LAN or internet.
- Videoconferencing means to conduct a conference between two or more participants at different sites by using computer networks to transmit audio and video data.
- Each participant has a video camera, microphone, and speakers mounted on his or her computer. It can be point-to-point (two people) or multipoint (many people) connection.
- Several platforms used include Skype, Facebook, WhatApps video calls.

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d) Computer-based Instructional Media

c) Web 2.0 technologies

- This includes Internet tools that enable communication and sharing of information and knowledge e.g. Social media, social networking platforms etc.
- They help to create virtual learning communities
- They support collaborative learning by facilitating learner-learner, learner-teacher and learner-content interaction
- These technologies support generative Learning
- Generative Learning means self-initiated/learner-controlled collaborative learning in which people in a social network shared ideas and solve problems

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- Discuss the use of Web 2.0 technologies in teaching and learning
- Highlight the advantages of using Web 2.0 technologies in teaching and learning.

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Advantages of Computer-based Instructional Media

- Interesting and motivating
- Compatible learning style
- Promote enthusiasm
- Helps shy and slow learner
- Immediate feedback
- Error analysis
- Critical thinking ability
- Process design ability
- Team work
- Outcome oriented process
- Communication skills

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Disadvantages of Computer-based Instructional Media

- Learners with low motivation or bad study habits may fall behind.
- Without the routine structures of a traditional class, students may get lost or confused about course activities and deadlines.
- Students may feel isolated from the instructor and classmates.
- Instructor may not always be available when students are studying or need help.
- Slow internet connections or older computers may make accessing course materials frustrating.

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Disadvantages of Computer-based Instructional Media

- Managing computer files and online learning software can sometimes seem complex for students with beginner-level computer skills
- Hands-on or lab work is difficult to simulate in a virtual classroom
- Learner may feel overwhelmed at the volume of material presented.
- Overuse of multimedia can detract from intended learning objectives.
- Inability to ask a “person” a question when material is not understood.

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Disadvantages of Computer-based Instructional Media

- Equipment can malfunction can occur.
- lack of infrastructure to deliver computer-based instructional media

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