

## Quadrant-I (e-Text)

### Details of Module and its structure

Module Detail	
<b>Subject Name</b>	<b>Education</b>
<b>Course Name</b>	<b>ICT in Education</b>
<b>Course Code</b>	<b>EDU504</b>
<b>Module Name/Title</b>	Multimedia: Meaning and types; Multimedia tools: audio editing, screen casting, graphic editing, basics of animation, creating interactive media; Evaluation of multimedia resources.
<b>Module Code</b>	<b>IIE008</b>
<b>Pre-requisites</b>	Learners have knowledge about the use of audio visual aids as instructional tools
<b>Learning Outcomes</b>	<p>After going through this unit, the learners will be able to:</p> <ul style="list-style-type: none"><li>• Use multimedia in teaching Learning after categorizing the types of multimedia</li><li>• appreciate the role of multimedia in education and can create interactive media for instructional purpose</li><li>• create and edit multimedia tools viz. audio, videos, graphics and animation and</li><li>• adopt multimedia approach and resources in education</li><li>• evaluate multimedia resources and use the appropriate one in the classroom</li></ul>
<b>Keywords</b>	Multimedia, Multimedia Tools and Editing

#### 1. Development Team

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## Table of Contents

1. Introduction:.....	3
2. MULTIMEDIA: .....	3
3. Role of Multimedia in Education.....	7
4. Tools and Devices for Creating Multimedia.....	8
Multimedia Editing .....	10
Video Editing.....	11
Screen Casting .....	11
5. Basic Principals of Animation .....	12
6. Evaluation of Multimedia Resources .....	13
7. SUMMARY .....	13

## **1. Introduction**

The World today is the world of technology and we cannot imagine the world without gadgets. Today the students are learning the facts, skills and attitudes from the pictures, recorded words, television, programmed lessons and other media. Dramatic renovations usually begin with once technology enters the school building. With the technology magic touch, a simple school house turns in to a systemized learning centre. Technology is catalyst for educational change in the instances where the student is the centre of attention. The combination of the advancement in both hardware and software has resulted in enhanced learning facilities. Audio, animation, graphics with music or sound and video help interacting with others in a virtual setting.

## **2. MULTIMEDIA**

Media is the means for transmitting messages. Media includes aids named as audio visual aids in the sense that they call upon the auditory and visual senses of students. Any type of information received can be categorized as multimedia. From tv's, to magazines, websites, movies etc, multimedia is a tremendous force in both informing and entertaining the public. Advertising is probably the biggest industries that use multimedia to convey their message to the masses. Multimedia refers to that digital information can be represented through audio, video and animation in addition to traditional media. Multimedia essentially uses computers to convey text, sound, animation, video and interactive features and still images in various ways and combinations made possible through the advancement of technology. Multimedia in teaching has been extremely impactful in teaching individuals a wide range of subjects. The human brain learns using different senses like as sight and hearing. While an educational session can be extremely informative, one that integrates pictures or video images will help an individual learn and retain the information much more effectively. As technology progresses, so does the multimedia. Now a day there are plenty of new media technologies being used

to create the complete multimedia experience. to state an example, virtual reality integrates the sense personal presence and interaction with video and audio media to submerge an individual into a virtual world.

### **Components of Multimedia**

The different building blocks of Multimedia are Textual information, computer graphics, animation, Images, digital audio and digital video. Any multimedia application consists one or combination of them.

**1. Textual information:** Text and symbols play a very important for communication in any medium. Multimedia productions contain some amount of text and even might contain large amount of textual matter. Using text in online training has the advantage of being small text files so they perform well at low bandwidth, the user can search for specific words or phrases, and text can be easily updated. Text can be directly created within an authoring application or import it from external text files. A well Written text makes a multimedia communication wonderful.

**2. Images:** Students generally don't like reading a large amount of text material on screen. And a subject is better explained when it is represented in the pictorial of graphic form. Images play a very important role in a multimedia as it is expressed in the form of still picture, painting or a photograph taken through a digital camera. Images give a holistic picture of the concept and in an easy understandable ways and makes use of cortical skills: texture, line, form, dimension, visual rhythm and especially imagination. These images can be edited with the help of few of the softwares like general drawing programs, JASC Paint Shop Pro, Corel Photo Paint, Macromedia Fireworks, Art Rage: free (NZ) paint program simulating, Corel Draw, and Open Office / Libre Office Draw, GIMP, and Mypaint.

**3. Computer Graphics:** Computer Graphics is similar to images but here the images which are created on the spot by the user can be included. These graphics may also include photographs, charts, trees, graphs from spreadsheet, pictures from CD-ROM or something pulled from internet.

Computer graphics are very helpful in education as they provide the supplementary information to the textual data or the verbal communication of the teacher. Two of the most popular graphic formats which are used for online training and Web pages in general are GIFs and JPEGs. Both of these are bitmap files are comparatively small in size. The two formats compress the images differently, each one better at compressing the different types of graphics in their own way. Using software such as Macromedia Fireworks, one can compare the file size of graphics with various optimization settings to help choose the best file format.

**4. Digital Audio:** The most common reason of using digital audio is that it sometimes enhances the learning concepts and reinforces the ideas presented as text or graphics on the screen. Any sound is a repeated pattern of pressure in the air. A mic converts a sound wave into an electric wave which is then recorded in a computer. Sounds may also be recorded and reproduced using digital signals and the error can be eliminated which is, at that time, present in electric form.

**Audio Formats:** The WAV and AIFF audio formats, popular on MS Windows and Macintosh systems respectively, usually create files that are relatively large to use in an online course. The open source audio editing software audacity is a very popular tool for audio editing. These are six Audio tools that support audio editing and recording:

1. Audacity
2. Mp3 Audio Editor
3. Power sound Editor free
4. Waosaur
5. Traverso DAw
6. WaveSufer

**4. Digital Video:** Although any video requires lots of bandwidth to download, it is very useful for conveying certain information. Using video in e-learning realistically helps demonstrate equipment and processes among other things.

For instance, an e-learning course in botany may show a video of a sprouting seed. A course about the features of an airplane may show a video of a crew member properly closing and securing a door before take-off. The intricate level of detail which can be achieved in a video is ideal for illustrating subtle, visual or statistical information. For example, to teach sales skills you could use a video to demonstrate an interaction between a salesperson and a customer, then have the learners observe the body language of the people involved in the transaction.

**Video Formats:** There are three standard digital video formats: Quick Time, Video for Windows, and MPEG. Video files are usually large so they really aren't appropriate for delivery via modem connections. It's a good choice to include video in your e-learning courses if you are delivering it over intranet or to users with relatively high bandwidth connections. There are many open source video editing tools and open shot is one of them.

**5. Animation:** Animation plays an important role in the multimedia program. It requires system in-built hardware and software. Animation illustrates concepts with movement, helps visualize processes, or draws attention to a region or elements of a screen. It is basically a continuous series of still images that are displayed in a sequence. Mainly two types of animation 2D and 3D are used. Some animation packages are equipped with twining facility i.e. automatic creation of a series of graphic frames between previously created frames. 2D and 3D animations are both equally important for education purposes. Since animations usually involve graphics, they are majorly dependent upon the size and file type of the graphics that are being rendered.

**Animation Formats:** There is a vast number of ways via which you can create animations. Authorware, Director, Dreamweaver and Flash can all create animations. An animation created within a chosen program is usually smaller and more efficient than an animation created in another tool and then imported in that same chosen program. This is usually true when an animation is based on shapes created with the software's own drawing tools rather than with imported bitmaps. For example, Flash excels at rendering vector graphics

and animations. Although Flash can render bitmap graphics, animations made mainly with vector graphics in Flash are considerably smaller than animations created with bitmap graphics. Simple 2D animations can be made using open source tools like pencil or tupi or more advance tools like blender.

### **3. Role of Multimedia in Education**

Multimedia enhances the quality of education. It provides new ways for teachers to encourage Three C's; Critical thinking and Problem Solving, Creative thinking and Collaborative efforts. A major advantage of using multimedia sources in the classroom is the ability to bring in photographs, audio and videos in the classroom. It can help ensnare the attention of learners in general and students in particular. Students are free to learn and experience their own. Computer programs and internet sites are also able to give students experiences that might ordinarily be unsafe, such as views from scaling mountains in a geography lesson, or a dissection of a rare animal. Multimedia helps students simulate real life situations. Multimedia promotes constructive approach. Additionally, using projectors and individual computers gives students the opportunity to view information or materials up close, to their convenience, as words combined with images help increasing retention and manage the cognitive burden. Specifically, graphics are found to support retention because important elements are focused on via placement, layout and color. Activation of prior knowledge is engaged quickly with visual representation, and mental models are created easily as diagrams which can then enhance understanding of how a concept works. Additionally, learning is made easier because simulations allow students to visualize real-life scenarios, and motivation is enhanced as students are able to see the relevance of these skills. Fun is considered missing factor in classrooms today, multimedia turns boring classroom activities into fun.

#### **Developing Multimedia:**

Creating or developing Multimedia includes pre planned and organized use of all available resources which include all the elements of Multimedia viz. Text,

Audio, Image and Graphics, Video, Animations and all electronic and other media to achieve the goal of education in a most effective and efficient manner. Thus the development of Multimedia focuses first on the learners and what is required for them and of them. Besides this principles of coherence of topic, signaling, relevancy, accessibility and availability should be kept in mind. It involves planning instructional objectives, instructional content, instructional methods, instructional media, ways to deliver the content, and lastly, evaluation. There are plenty of 50 instructional design models for developing multimedia.

#### **4. Tools and Devices for Creating Multimedia**

A combination of different tools like the Camera, Camcorder, Interactive White Board, Scanner or the Multimedia Projector more or less give a clearer understanding of concepts and the following is a list of how these different tools are used to integrate various learning materials, be it sequentially or non-sequentially:

**1. Digital Camera:** A Digital Camera is an electronic device that converts images and videos digitally and stores them for later reproduction. Most cameras that are used today are digital and are incorporated into many devices like mobile phones, laptops, tablets, vehicles and many other. Unlike film cameras, digital cameras are able to display images on a screen immediately after being recorded, and conveniently store and delete images from memory. The stored images can be uploaded directly to a computer immediately for the purpose of printing and can also be stored in an external disc. Many digital cameras are also able to record moving videos with audio. Some can crop and edit pictures.

**2. Camcorder:** A camcorder is a transportable electronic recording device used in recording live-motion video and audio for future playback. Earlier the Camcorder used to be bulky and heavy, and used magnetic tape for the recording. But now, however, camcorders are compact, light and have better picture quality with longer battery life. The important aspect of the recorded



video is that it can be stored and transferred to a computer where you can edit with ease which allows you to change the order of shots and undo edits. This means that you can easily modify, draft and re-draft the recorded films and use it creatively to prepare Multimedia Learning Material.

**3. Scanner:** A scanner is an input device that converts a paper resource such as a photograph, textual document into a digital form by a process referred to as scanning. Usually, scanners are flatbed and have a cover which can be lifted for the magazines, photographs and bulky books to be scanned. They work in combination of computer software programs which help in the creation of an electronic version of the scanned document, allows you to view it and edit it on a computer. Thus you can use and publish the stored image as it is or by modifying it.

**4. Interactive Whiteboard:** An interactive whiteboard (IWB) is a large interactive display that connects to a computer. A projector projects the computer's image onto the board's surface where users control the computer using a suitable tool like a pen, finger, stylus, or other device. It is usually mounted to a wall or floor stand. They are used in all kinds of places, including classrooms at all levels of education, in corporate board rooms and work groups, in training rooms for professional sports coaching, in broadcasting studios, and others. Characteristics accessible while using an interactive board is adding comments, highlighting text, adding notes and drawings and save, showing pictures and educational videos, showing the content on a website.

**5. LCD Projector:** A Liquid Crystal Display Projector is a type of video projector for displaying videos, images or computer data on a screen or any other flat surface. The representation of visual media via projection is an effective way to entertain, educate, indulge and communicate with people on a large scale. The use of Multimedia Projector can bring the audio and visual inputs to the classrooms. It can be projected on the screen allowing everyone to relish the presentation, it can be made interesting by involving movies and related clippings into the lessons.

## **Multimedia Editing**

Multimedia editing is a broad term that covers the production and manipulation of digital audio-visual files such as images, audio files and video files. Multimedia forms a ubiquitous part of our daily lives – from movies and television to our online presence. And with the exponentially increasing ability of people to make their own digital content using simple tools such as their mobile devices, it stands to reason that the ability to edit and curate content which stands out is only limited to skill. File formats such as MP3, MP4, and AVI etc. are some of the most commonly used formats. Each file format consists of a variety of layered elements incorporated for normal consumption. Edited videos include text, images, sound and video, and tend to be the densest of all multimedia files. Comparatively, audio and images are much easier to work with. Within multimedia editing, there are finer areas of audio and images editing, which require a different set of tools and skills to master. Multimedia editing is therefore the skill of being able to combine various content files into a singular file type. Usually a video file.

Multimedia editing involves at least three types of files: audio, images and video. And although a single software can successfully work with all three file types, to ease that requirement, a number of software are available to let you manage and work with each of these components individually.

### **Audio Editing**

Audio Editing is a way to edit, shorten, superimpose or otherwise shift a piece of music or spoken audio to make it ideal for either auditory or visual pleasure. With the advent of new technologies in audio editing, editing over the years has become more precise and easier. Software and hardware programs are curated specifically to help editors piece together music or audio pieces, and are generally referred to as digital audio workstations (DAWs). The idea behind audio editing is to usually take a piece of audio and slice and dice it so that it is free of errors and consistent to listen to.

## **Video Editing**

Video editing tools are the mother lode of multimedia editing since they come packed with a variety of features required to create a multimedia project. Such software gives you the freedom to take an assortment of shot footage, combine it with audio, graphics, effects and text and create a unique project.

## **Screen Casting**

Screen casts have emerged as a prominent teaching tool on the Internet. Screen casts are an effective way to share ideas, deliver content, and obtain student feedback. Screen casts can help understand a step-by-step process, a particular concept, or presenting a PowerPoint presentation with narration and multimedia elements. A screen cast is an audio and video recording of what occurs on a computer screen, and can be used to create information-rich multimedia presentations. The word "screen cast" was first coined by columnist Jon Udell in 2005. Screen casts can provide learners a more personalized and intuitive learning experience in both distance and traditional learning settings. To align screen casts with lesson objectives, goals, assessment practices, and standards, instructors can create their own screen casts rather than browsing through the thousands of educational screen cast videos on the web. Good educational screen casts depend not only on thorough planning but also on thoughtful and careful editing to re-sequence lesson elements, eliminate awkward and unnecessary portions, and craft a focused, easy-to-follow presentation that uses students' time efficiently. Screen casting can be integrated across the curriculum and into many learning activities. Screen casts are an effective instructional format that can be used for tutorials, demonstrations, digital storytelling, and narrated PowerPoint presentations. During the video editing process, a variety of media can be imported into a screen cast project, such as video clips, photos, music, and animations. There are many advantages for both the student as well as the instructor. The screen cast is an efficient and effective means of describing a step-by-step process, explaining a particular concept, or presenting a PowerPoint presentation with

narration. Screen casting also allows the students to learn by example, seeing for instance a step-by-step sequence in great detail or viewing a screen cast video directly related to lesson content. In addition, students can watch a screen cast video according to their own convenience. The pervasiveness of online instructional videos such those provided by as Khan Academy, Teacher Tube, You Tube, Lynda.com and many others give student access to many educational screen cast videos on the Internet. Recently there has been a lot of interest generated in the flipped classroom teaching model.

In designing a screen cast, instructional planning is essential in delivering quality instruction, as is a systematic approach to planning. With the flipped teaching method, instructors use screen cast videos to deliver their lectures, assigning them as homework. During lectures, students can ask doubts as they work through problems that they normally would've done at home without teacher's help.

## **5. Basic Principals of Animation:**

Educators are enthusiastically taking up the opportunities that animation offers for depicting dynamic content. For example, Power point now has an easy-to-use animation facility that, in the right hands, can produce very effective educational animations. Because animations can impactfully depict changes over time, they seem ideally suited for the teaching of processes and procedures. When used to present dynamic content, animations can mirror both the changes in position and the changes in form that are fundamental to learning this type of subject matter.

In contrast with static pictures, animations can show temporal change directly using auxiliary markings such as arrows and motion lines. Well-designed animations help students learn faster and easier. They are also an excellent aid to teachers when it comes to explaining difficult subjects. There may arise difficulty of subjects due to the involvement of imagination or mathematics. For instance, the electric current is invisible. The operation of

circuits is hard for students to understand at the start. With the help of computer animations, learning and teaching might become faster, easier and amusing.

## **6. Evaluation of Multimedia Resources**

Evaluation provides proof to help improve our activities and programs. Information on whether aims and goals are being met or not and on how different aspects are working is necessary to a continuous improvement process. Evaluation also regularly provides new developments or information that was not anticipated. It helps in enhancing the multimedia products and measure their effectiveness. The evaluation of the Multimedia material benefits the learners and helps to guarantee that they receive the highest quality Multimedia material.

## **7. SUMMARY**

In today's oh-so-digital world, it is safe to say that multimedia, indeed, plays a vital part. Technology catalyses educational change in the instances where the student is the centre of attention. The combination of the advancement in both hardware and software has resulted in enhanced learning facilities. Audio, animation, graphics with music or sound and video help interacting with others in a virtual setting. Any type of information received can be categorized as multimedia. From tv's, to magazines, websites, movies etc, multimedia is a tremendous force in both informing and entertaining the public. Advertising is probably the biggest industries that use multimedia to convey their message to the masses. Multimedia refers to that digital information can be represented through audio, video and animation in addition to traditional media. Multimedia essentially uses computers to convey text, sound, animation, video and interactive features and still images in various ways and combinations made possible through the advancement of technology. As technology progresses, so does the multimedia. Now a day there are plenty of new media technologies being used to create the complete multimedia experience. The

different building blocks of Multimedia are Textual information, computer graphics, animation, Images, digital audio and digital video. Any multimedia application consists one or combination of them. A major advantage of using multimedia sources in the classroom is the ability to bring in photographs, audio and videos in the classroom. It can help ensnare the attention of learners in general and students in particular. Multimedia helps students simulate real life situation and it promotes constructive approach. Fun is considered missing factor in classrooms today, multimedia turns boring classroom activities into fun. A combination of different tools like the Camera, Camcorder, Interactive White Board, Scanner or the Multimedia Projector more or less give a clearer understanding of concepts. Editing is an important component of multimedia. Multimedia editing involves at least three types of files: audio, images and video. Audio Editing is a way to edit, shorten, superimpose or otherwise shift a piece of music or spoken audio to make it ideal for either auditory or visual pleasure. The idea behind audio editing is to usually take a piece of audio and slice and dice it so that it is free of errors and consistent to listen to. Video editing tools are the mother lode of multimedia editing since they come packed with a variety of features required to create a multimedia project. Such software gives you the freedom to take an assortment of shot footage, combine it with audio, graphics, effects and text and create a unique project. Screen casts have now emerged as a prominent teaching tool on the Internet. Screen casts are an effective way to share ideas, deliver content, and obtain student feedback. Screen casts can help understand a step-by-step process, a particular concept, or presenting a PowerPoint presentation with narration and multimedia elements. Evaluation provides proof to help improve our activities and programs. Information on whether aims and goals are being met or not and on how different aspects are working is necessary to a continuous improvement process. Evaluation also regularly provides new developments or information that was not anticipated. It helps in enhancing the multimedia products and measure their effectiveness. The evaluation of the Multimedia

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<https://whatis.techtarget.com/definition/antialiasing>

<https://www.techopedia.com/definition/7686/image-editing>

**<http://sahet.net/htm/swdev8.html>**

### **Suggested Readings:**

<https://en.wikipedia.org/wiki/Camcorder>

[https://en.wikipedia.org/wiki/Digital\\_camera](https://en.wikipedia.org/wiki/Digital_camera)

<http://www.multimediacourses.in/2018/01/12/12-basic-principles-of-animation/>

<https://www.digit.in/technology-guides/fasttrack-to-multimedia-editing/introduction.html>

**Activities:**

[https://www.youtube.com/watch?v=hv3eAD\\_HH6Q](https://www.youtube.com/watch?v=hv3eAD_HH6Q)

<https://community.articulate.com/series/articulate-engage-13/articles/editing-audio-in-articulate-engage-13>

<https://www.youtube.com/watch?v=JZdv5lrJs4U&list=PL20E84CD77B301A20>

**Self-Assessment:**

1. \_\_\_\_\_ is combination of text, graphic art, sound, animation, and video delivered by computer or other electronic devices.

A. Multimedia B. Network C. Hyper media D. Visual Me

2. We need hardware, software and \_\_\_\_\_ to make multimedia

A. network B. compact disk drive C. good idea D. programming knowledge

3. The people who weave multimedia into meaningful tapestries are called \_\_\_\_\_.

A. Programmers B. Multimedia Developers C. Software Engineers D. Hardware engineers

4. Multimedia elements are typically sewn together into a project using \_\_\_\_\_.

A. Authoring tools B. Multimedia tools C. Audio tools D. Video tools

5. What form of digital media uses file formats with the abbreviations JPEG, PNG and TIFF?

- A. Images
- B. Photographs
- C. Video
- D. Audio

6. Which of the following statements is false? (There is more than one correct answer.)

- A. Smart phones now have very high quality built in audio, video and photo capabilities. The results are just as good as what can be obtained by using professional cameras and recording equipment.
- B. If young people already have smart phones, they can be a handy way to generate photos, audio and video quickly. The quality may not be great though.
- C. The audio, video and photo quality of smart phones is so poor that they are not worth using for research purposes.



- D. Modern smart phones can produce still images of a reasonable quality. The quality of video and audio they produce is less good, but this can be improved by using certain apps and add-on devices.
7. What do Audacity, Wavepad and GarageBand have in common?
- A. They are all open source.
  - B. They are all used for audio editing and production.
  - C. They are all designed to work on mobile devices.
  - D. They are all free.
8. \_\_\_ stands for Graphic Interchange Format.
9. GUI stands for Graphical User Interface. (True/ False)
10. \_\_\_\_\_ is the collection of multimedia elements displayed on a computer screen for user interaction.
11. A video consists of a sequence of
- A. Frames
  - B. Signals
  - C. Packets
  - D. Slots
12. A smaller version of an image is called:
- A. clipart
  - B. bitmap
  - C. portable network graphic
  - D. thumbnail
13. A \_\_\_\_\_ can be added to presentation and then used to go to a variety of locations e.g. a web address, an e-mail address, a custom show or document, just to name a few.
- A. menu link
  - B. Hyperlink
  - C. tool link
  - D. slide link
14. One of the disadvantages of multimedia is:
- A. cost
  - B. adaptability
  - C. usability
  - D. relativity

**Answers:**

1. A ,2. C, 3. B ,4. A, 5. A, 6. All, 7. B, 8. GIF, 9. True, 10. GUI, 11. A, 12. D, 13. B, 14. A