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Teaching Manual on Communication Methods and Agricultural Journalism

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Introduction to audio visual communication

Over time, technology has changed to allow people to communicate efficiently and has gone from a means to make difficult tasks easier. Technology has always been a present force acting in the world. It started out as simple tools created by the most primitive humans and evolved into other tools that made life easier for the people and the inventor himself. In the mid 20th century, the technological advances began to boom. Engineers and educators began to look for new ways to make computers do tasks as media that would help them in communicating effectively. The importance to use different methods of communication lies in the role of communication in the effective functioning of any organisation. Today one can quickly send important proposal via e mail to any corner of the globe, give a presentation to the board with the help of video conferencing in a cost effective way. Most times, simply choosing a method of communication due to it being a famous instrument is not going to help rather one is required to understand the target audience, costs involved, kind of information to be shared and the way it will affect the productivity of the system. As such there is no 'right' method of communication and the most appropriate communication technology for all times to come. We would need different methods for different purposes and tasks. The methods of communication have the capacity to make or break the structure of any organization and also affect the relationship, if not chosen carefully.

Projected and electronic materials are forms of media which could be visual, audio and audio-visual in nature that requires projection and electricity in their using process for teaching and learning situation. According to *Burton*, visual aids are those sensory objects or images which initiate or stimulate and support learning. It means that visual aids are those aids which appeal to the sense of vision or the eye in which children can see something (Dash and Dash, 2007). In a more complete meaning, Singh (2005) defines visual aids as any device which by sight and sound increase the individuals' practice, outside that attained through read labeled as audio visual aids. Visual aids give chance to speakers to make a more professional and consistent performance. Carter said "Audio visual aids are those aids which help in completing the triangular process of learning, i.e. motivation, classification and stimulation". According to Dale "Audio visual aids are those devices by the use of which communication of ideas between persons and group in various teaching and training situation is helped. These are also termed as multi-sensory materials". *According to Kinder S. Jame, '* audio visual aids are any device which can be used to make the learning experience more concrete, more realistic and more dynamic.' *McKean and Roberts defines* audio visual aids as 'supplementary devices by which the teacher, through the utilization of more than one sensory channel is able to clarify, establish and correlate concepts, interpretations and appreciations' and *Neeraja* defined it as an instructional device in which the message can be heard as well as seen.

Meaning and significance of audio visual aids

Audio visual aids are devices that help to clarify, establish, correlate and co-ordinate accurate concepts, interpretations and appreciations and enable him to make learning more concrete, effective, interesting, inspirational, meaningful and vivid. They help in promoting triangular process in learning through motivation, clarification and stimulation. The aids are the stimuli for learning 'why', 'how', 'when' and 'where'. Kothari Commission (1964-66) observed that it should indeed bring about an 'educational revolution' in the country. The supply of teaching aids to every school was essential for the improvement of the quality of teaching. The National Policy on Education, 1986 and as modified in 1992 has stressed on the use of teaching aid to make teaching learning more effective and realistic. Historically first mention of audio visual aids was

by Desiderious Erasmus (1466-1536) who advocated that children should learn through the aid of pictures followed by John Comenius(1592-1670) who prepared a book 'Orbis Sensulium Pictus' (The world of sense organs) containing 150 pictures on aspects of everyday life. Later Rousseau (1712-1778) condemned the use of words and stressed 'things' and Pestalozzi (1756-1827) in his object method based instruction on sense perception. Term *'visual education* was first used by Nelson .J. Green in 1926. Eric Ashby (1967) identified four revolutions in education: education from home to school/written word as tool of education, invention of printing and use of books and lastly in the fourth revolution in the use of electronic media. Cobun (1968) indicated that 1% of learning is from the sense of *taste*, 1.5% from the sense of *touch*, 3.5% is from the sense of *smell*, 11% is from the sense of *hearing* and 83% is learned is from the sense of *sight*. Also people generally remember 10% of what they *read,* 20% from *hearing,* 30% from *seeing,* 50% with a combination of *hearing and seeing,* 70% through *verbal* or *saying* and 90% of what they *say* as they *do* a thing.

Audio visual aids are termed to be the best motivator to arouse more zeal & interest. Clear image takes place when we, touch, handle, experience it. Audio -Visual Aids gives variety & provides different tools in the hand of user. With the use of Audio -Visual Aids, there is a great scope learners to move about talk, laugh & comment upon and provide opportunities to handle the aids. Attention is the true factor in any process of learning and teaching and audio – visual aids help in provisioning proper environment for capturing as well as sustaining the attention and interest of the students in class room. Due to effective implementation of "principle of presentation", a good deal of energy & time of both the teacher & students can be saved. The Audio -Visual Aids gives the real touch to the learning situation through variety of stimuli, motivational, provisional of active participation of students which lead to good experience and encourage healthy interaction. The audio-Visual aids like radio, tape, television etc always plays role in spreading mass education. A balanced, rational, scientific use of Audio - Visual Aids develops, motivate, experience, attract the attention of the students and provides a variety of creative outlets for energy making overall classroom environment as conducive to creative discipline. They help to reduce verbalism. The over use of words can result in serious problem such as verbalism and forgetting. The use of variety of audio visual aids helps in meeting the differential needs of audience. In addition to stirring the imagination, thinking, process and reasoning power of the learners the audio visual aids may increase the phenomena of scientific temper.

Visual communication is rhetorical in nature. Documents are being regarded as more than words. Readers do not experience welter words in a vacuum. As soon as whey communicator present a topic, audience start to take in many kind of visual information about it, from its apparent size to details of type, color, layout and illustrations. Thus the design of a document is rhetorical, part of the interaction of waters and readers and contributing to effective communication. Visual communication and design contributes to your ethos and credibility. Design that respects readers knowledge supports a texts ethical appeal, while inappropriate format or jarring visual choice may make the document less credible.

Enormous amounts of information are transmitted visually. Consider the sources of the information you depend on each day. As a student, consider your class materials, your notes, and the strategies you use to study. As a professional, consider how ideas are expressed and conveyed within your professional circles. In your personal life, consider how various media influence you and what part visuals play. Think about how you use (or are used by) the visuals in television, magazines, newspapers, and product catalogs. In virtually every case, visuals of some sort and variety are the main vehicle of expression and communication. Consider how influential visuals such as facial gestures and other body movements (usually referred to as **nonverbal communication**) are in face- to-face conversations and social interactions. As you become better at evaluating the ways in which visuals inform and influence people, you will not only begin to understand the uses, abuses, and misuses of visuals in communication, but you will also appreciate more the human visual processing system. There are, in fact, few examples in which visuals of some sort do not play a role in daily communication. Telephones and radio are probably the most notable exceptions. Yet, even

in these cases our minds make up visually where these media leave off. The motto for radio advertising — "Say you saw it on the radio!" — sums up our ability to conjure up images with even the slightest prompting. Though the root of this ability is considered innate, it is nurtured as we mature. Visual skills are particularly important in many problem-solving situations. One such skill is the ability to quickly see patterns in information represented visually. Given this attention to visual modes of communication, it should not be inferred that other channels are unimportant or should be ignored. In social interactions, speaking and listening are the dominant methods of communication. In computer-enhanced training situations, the expense (in terms of hardware and/or memory) of voice integration — including both speech output and voice recognition — has prevented effective integration of aural communication channels in existing software and computer systems. The status of computer speech and voice integration changes almost daily and inevitably will change current notions about how people and computers should interact. Even when the language capabilities of computers become as natural as everyday human conversation, visual channels will flourish and remain a dominant influence in the presentation and interaction of ideas in computer environments.

Some Definitions

The meanings of the terms **visual**, **graphic**, **image**, and **picture** greatly overlap and are often used synonymously. Strictly speaking, computer visuals refer to all possible computer output, including text. Instructional computer graphics are considered a subset of computer visuals and involves the display of **nonverbal information**, or information that is conveyed spatially. Included in this definition are the range of computer-generated pictures, with **pictures** being defined as graphics that share some physical resemblance to an actual person, place, or thing. The quality of these types of graphics ranges from near photographic to crude line drawings. Also included is the spectrum of nonrepresentational graphics, including, but not limited to, charts, diagrams, and schematics. Besides its general meaning, the term **visualization** also describes an interdisciplinary field of study in which computer graphics techniques are used to display images that convey a wide range of information. In this sense, visualization differs from computer graphics in that visualization stresses the information that is conveyed in the resulting image (Brown & Cunningham, 1990). However, for simplicity's sake, **graphics** typically will be used throughout this book to denote all visual information conveyed through nontextual ways. The terms **computer-assisted instruction** (CAI) and **computer-based instruction** (CBI) are also often used synonymously. However, there are distinctions between these terms. CBI usually refers to instructional systems that are completely computer-based. Instructional delivery, testing, remediation, etc., are all presented and managed by computer. On the other hand, CAI usually refers to supplemental or adjunct uses of the computer to support a larger instructional system, such as a traditional classroom (Hannafin & Peck, 1988). CAI includes traditional, structured (deductive) approaches such as those associated with tutorial and drill-and-practice software, but also the informal, discovery (inductive) approaches associated with computer games and simulations.

Functions of visuals and graphics

Effective communication can be quite challenging, especially making a speech or giving a presentation. In order for the communication to be effective, we must keep the attention if the listeners and deliver the information in such a way that it is fully understood. One of the most effective ways to get one message across and make it memorable is with visual aids. Visual communication is the communication in which conveyance of ideas and information in forms that can be read or looked upon through visual aids. It is primarily represented with two dimensional images; it includes signs, typography, drawing graphic design, illustration, color and electronic resources. This visual communication is based on the idea that a visual message accompanying text has a greater power to inform educate, and persuade a person or audience. The term visual presentation is used to refer, the actual presentation of information through a visual or visible medium such as text or images. Graphic designers also use the method of visual communication in their professional practices. Visual communication on the world wide is the most important form of communication that takes place while users

are surfing the net, while that time one uses the eye as the primary sense, and therefore the visual presentation of the message is very important to understand the meaning. The eye of a locus often referred to as symbol of visual communication. It is said to be a representation of an eclipse, as the cornea around the pupil is like corona around the sun during a solar eclipse.. The visual aids help in:

1. Memory retention: Psychologists and educators have found that use of visual tools led to retention of information six times greater than when information is presented by spoken words alone.
2. Attention span: Everyone has the limited attention span. Using visual aids refreshes the mind and engages it in a different way, renewing the attention span. Visual aids keeps the mind entertained and therefore sharp and ready to receive information.
3. Organizing communication: Visual aids can be used to organize communication, making it easier to remember points made in a presentation. The introduction of a different visual aid for each point of a speech or presentation helps the mind to separate messages into smaller chunks of information. The visual aids also create a point of reference for the mind to quickly refer to when attempting to retrieve information.
4. Comprehension: Not everyone understands concepts and information at the same rate. Visual aids create repetition and the more repetition in communication, the greater the chance that the audience will understand and remember effectively.
5. Graphic communication is communication using graphic clements includes clements; symbols such as glyphs can include the passive contribution of substrate, color and surroundings. It is the process of creating, producing and distributing material incorporating words and images to convey data, concepts and emotions.

Graphics are visual presentation on some surface such as wall; canvas, computer screen; paper or stone to bland inform, illustrate or entertain. Graphics often combine text, illustration and color. Graphic design may consist of the deliberate selection, creation or arrangement of typology alone. Graphics may be functional or artistic. The use of graphic aid has become an important teaching strategy. As educators learn more about how to reach all type of learners, the use of graphic aids assists in differentiating instruction, giving students greater access to content and helping students to achieve greater comprehension of new information.

1. Differentiating Instruction: Graphic aids provide the differentiation needed to ensure that all learning types have been adequately introduced to key skills or concepts.
2. Provides Access to Content: Graphic aids provide much needed access to content when learners are low level readers. Using magazines, videos or concept maps are a way to teach these students the lessons objective while also keeping them interested in the material.
3. Facilities Greater Comprehension: They allow students to spend more time with the content and solidifies understanding.
4. Engages All Learners: Graphic aids are a great tool to engage all students in the learning process. Learners need content stimulation, so lecturing is not an effective teaching strategy by itself. The use of graphic aids allows educator to vary the delivery of lessons and keep learners interested in learning.

Everyday Uses of Graphics and Visual Images

Some of the most stunning examples of graphics that communicate come from outside of education. The popular media — such as television, newspapers, and magazines — have long abandoned any real restraint when it comes to using visuals. True, most visuals are used primarily to capture the viewer's or reader's

attention for just a few precious seconds.

Often, though, the visuals are intended to enhance a memory function by influencing people to remember one product over all others. Consider the many variations of the popular beer commercial that all end in a frustrated "I meant a Bud light!" Pictures go through our minds of all the wrong "lights" that the hapless people seem to uncover. Because they are novel and amusing, the pictures are easily remembered. We automatically associate the pictures with the product name because we have been subjected to countless rehearsals of the two. So, we are likely to remember this one company's product first if we are out shopping for beer. The success of this commercial is a prime example of using pictures as a powerful mnemonic device — the images and the product name are forever associated or cemented together. You couldn't forget them if you tried. (It also demonstrates the power of applying some simple behavioral principles.)

Some of the best examples of using full-motion video to demonstrate procedural knowledge come from television toy commercials. Advertisers not only must capture the attention and interest of children (no small feat), but show them how to have fun with the toy, albeit in exaggerated and contrived ways. At their best, these commercials unravel the complex nature of a toy in as few as 15 seconds. Particularly good examples are all the varieties of commercials that tout toy robots that transform into cars, planes, and tanks. These commercials demonstrate a tremendous amount of information in a very short amount of time. Although this does not suggest that educators should become advertisers, there is still a great deal to learn from the techniques that successful advertisers use to visually communicate their ideas.

Graphics in Education

The use of graphics in education has a long history. The use of illustrations in books written in English, especially those intended for children, was commonplace by about 1840. After that time, the use of illustrations in children's books has been especially extensive, elaborate, and artistic. A wide variety of graphics — from photographs, pictures, and cartoons, to charts, maps, diagrams, and outlines — is common today in most teaching strategies. The use of graphics in instruction seems to make sense — it holds a certain degree of face validity. The cliché that a picture is worth a thousand words seems consistent with educational practice. However, research has shown that the relationship between the intent and results of graphics in education is often jumbled.

There is a tendency to use armchair methods of deciding when, where, and how to incorporate graphics in instructional and training strategies and materials. This can lead to unexpected results. Research is just beginning to demonstrate conditions under which static and animated graphics are generally effective, as well as those where graphics serve no purpose or, worse, do harm. For example, consider the cultural symbolism of the owl. Most people from western cultures treat this wise old creature of the forest with affection, although an owl often represents an evil omen for many Native Americans. Classroom teachers should carefully consider the impact of such innocent graphics on all their students. Like most issues in education, graphics represents a qualitative, not quantitative, issue. It is not simply a question of how many graphics are used that determines their effectiveness. The interaction between instruction and learning is complex and does not lend itself to many generalizations. Answers to questions about how best to employ instructional graphics are similarly elusive and evasive.

Instructionally, the role of graphics in computer environments covers a lot of ground. The computer can be used for traditional applications, such as graphics that present static informational images or text that helps someone to understand a concept or principle. Much of the instructional visual research over the past 40 years has pertained to applications such as these. Although most of this research has been in non computer contexts, it is still quite relevant. However, the computer offers many more instructional applications than just presentation. One of the most exciting, yet uncharted, areas involves computer micro worlds based on computer animation.

Domains of Learning

The design of all effective instructional materials, including graphics, starts by defining the goals of the lesson and the nature of the learning tasks and materials. An understanding of general learning theory is essential in designing effective visual displays. There is a wide range of learning outcomes. Probably the most well-known description of learning and knowledge is that provided by Benjamin Bloom (1956). Though somewhat dated, Bloom's original taxonomy of domains of learning is still considered as the standard against which current perspectives are compared. Bloom divided learning and knowledge into three domains: cognitive, affective, and psychomotor. The psychomotor domain involves the learning of physical tasks that require eye-hand-mind coordination. The affective domain largely comprises a person's attitudes and value systems. The cognitive domain concerns the learning of facts and skills and, for better or worse, comprises the "lion's share" of mainstream educational activities.

Robert Gagné (1985) has refined and extended Bloom's original descriptions to include five domains. He divides the cognitive domain into the three separate domains of verbal information, intellectual skills, and cognitive strategies, while keeping the affective and psychomotor domains essentially the same. Just as Bloom's model provides the most detail for the cognitive domain, Gagné's model is most complete for verbal information and intellectual skills. And it has wide acceptance and application in educational technology. Each of the five domains requires special considerations for the design of graphics. As a field, educational technology has been primarily interested in the cognitive domain, as it encompasses the bulk of instructional questions and problems. For this reason, verbal information and intellectual skills will be the two domains.

1. **Verbal Information Domain:** Verbal information involves the learning of factual material and includes verbatim learning, non-verbatim learning, and substance learning. Verbatim learning is learning by rote, such as memorizing a poem word for word. Non verbatim learning is the memorization of isolated facts, but in a learner's own words. An example is "Columbus discovered America in 1492" (although a Native American might dispute this "fact"). Substance learning involves the summarization of an instructional passage (such as that presented by text, video, or lecture) in a student's own words without requiring interpretation or application. An example of how images are used to help a person remember a fact is perhaps best illustrated with a television commercial for margarine popular several years ago. In the commercial, a person spreads the margarine on a piece of toast and takes a bite. Trumpets immediately sound, and a crown appears on the person's head. The intent of the commercial is to associate the image of a crown with the product name (Imperial, in this case). When the viewer goes shopping and has to decide which brand of margarine to buy, the amusing commercial and the image of a crown may be recalled. This, in turn, elicits the product's name. (In contrast, few people remember the exact brand name of margarine based on the slogan "It's not nice to fool Mother Nature!") (Using visuals to help remember isolated facts and details is an old, but successful, strategy (Bower, 1970; Carney, Levin, & Morrison, 1988). Visual mnemonics is at the heart of many "memory improvement" systems. In these systems, participants learn ways to quickly contrive and associate some visual image to a fact to be remembered, such as a person's name. The weirder and wilder the image, the stronger the memory trace will be. For example, try this little experiment for remembering the Spanish word for duck — pato (pronounced pah' toe). Take 30 seconds and visualize a duck with a pot on its head like a hat. Think about how "pot on duck" resembles "pato duck" while visualizing this image. As a test, write "Spanish word for duck" on a slip of paper and place it in your pocket. When you find the paper hours or days later, see

if you can remember the word. For most people, this little activity makes them remember the Spanish word for duck forever! Other examples of visual mnemonics include the many pegword systems (e.g., one is a gun, two is a shoe, etc.) and the method of loci (Just & Carpenter, 1987). The method of loci is a classic strategy often associated with public speakers. The trick is to associate parts of a speech with a mental and visual "tour" of a place you know well, such as your house. You then remember the speech by going on a mental "walk" through your house in your mind. This technique was often the same one used by traveling minstrels or poets hundreds of years ago, many known for their prodigious memories. Although visual mnemonics are proven strategies for recall tasks and other fact learning, there is also some evidence of their utility for higher-level learning as well (Levin & Levin, 1990). Visual mnemonics serve a transformation function (Levin, Anglin, & Carney, 1987) to directly impact and influence a student's associative memory. Such visuals are believed to be more memorable because of the way they target the most critical information to be remembered. Three components of transformational pictures help to explain this effect (known as the "three Rs" of associative memory techniques): the visuals *recode* the critical information into a more concrete form, *relate* it to a well-organized context, which subsequently helps a student to *retrieve* the information later.

2. **Intellectual Skills Domain*:*** Intellectual skills comprise a hierarchy of skills, each considered to be prerequisite to the other, beginning with concepts, then rules or principles, and, finally, problem-solving. Concept learning entails cognitive classification systems. Concepts are frequently classified as concrete or abstract (Tennyson & Park, 1980). For example, most nouns represent concepts, each falling on the continuum between concrete or abstract. Understanding the concept "chair" means that you can, for example, pick out all the chairs from a group of chairs and tables. To do this, you must understand the distinguishing attributes of chairs and tables — what makes a chair a chair and a table a table. Sometimes the context or situation can make even strange objects become part of the concept family. For example, a log taken from a stack of firewood can assume "chair" status if the wood cutter wants to take a small break and sit down. Because there are many varieties and possible examples of any one concrete concept, individuals usually construct their own personal prototype for concrete concepts. For example, what image first comes to your mind when the concept "bird" is suggested? This image is your personal prototype for a bird. Chances are it was something similar to a robin, sparrow, or cardinal. These usually best represent the essence of "bird" for most people. Few people immediately associate an ostrich or penguin, perhaps because the inability to fly or the ability to swim do not match most people's attribute lists for birds. Some words, like cardinal, belong to several concept families, such as birds, religion, and sports (especially for people living in St. Louis). The particular concept family that gets triggered depends on the context (E. Gagné, 1985). Mental prototypes help us to organize world knowledge, although such prototypes can also explain the tendency of people to form stereotypes. Much research suggests that pictures can help in remembering concrete concepts (Paivio, 1986). Abstract concepts are much harder to represent because they have no tangible form. Examples include the concepts of justice, freedom, honesty, and family. Designers often use a visual strategy where one concrete concept shows a snapshot of the abstract concept, such as a tree to represent the environment. Some abstract concepts hold strong cultural meanings for people. The concept of justice is often represented in American culture with the image of a blind-folded woman holding a set of scales. This image tries to communicate a concrete image of what is meant by justice, although it is certainly just one of thousands of possible representations (another common one is a judge's gavel). Of course, the danger of using such an image is that it may oversimplify the concept or bias the learner away from the breadth or range of examples that the concept actually represents. Analogies can be effective ways to teach abstract concepts (Newby

& Stepich,1987). How would you illustrate the familiar concept of "education"?

Rule learning and problem solving are examples of higher-order learning. Rules, also known as principles, comprise the learning of "if/then" situations and relationships. It is easier to precisely define rules in some content areas, such as mathematics and science, than in others. Examples of rule using in math would be the rules of addition and how to reduce fractions to lowest terms. In science, the application of any scientific formula, such as Newton's second law, would be an example of a rule. Of course, rules apply to all content areas, including social situations, such as deciding when to shake hands with someone. Research has shown that some visuals, such as schematics, can be used to help children learn mathematics (Fuson & Willis, 1989; Willis & Fuson, 1988). Problem solving is very controversial and is not easily defined. Gagné has operationally defined problem solving as the application of two or more rules at the right time and in the right sequence. Problem solving here consists of first isolating or defining the problem and then devising a solution based on rule selection, followed by the decision of when to apply what rule. Problem solving can become very complex very quickly, even using this simple model. There are hundreds of everyday examples. Consider what happens when you are at the grocery store trying to decide what brand of coffee to buy. You have decided to buy one of two brands, depending on which is a better bargain, but unfortunately each brand comes in a different size container. In order to determine the better buy, you have to select and apply the correct rules of how to calculate the unit cost of each brand. Gagné's definition of problem solving as described above suggests a hierarchical nature of learning in the intellectual skills domain. Problem solving is seen as largely a function of how well all relevant and subordinate rules have been mastered and how well the many rules are associated. Consequently, mastering any one rule requires adequate understanding of the concepts that comprise it. This hierarchy of learning obviously imposes constraints on instructional design. There are competing theories of how people solve problems, such as those viewing the process in a holistic way or those dealing with mental heuristics (e.g., Polya, 1957). Also, many inductive learning theories suggest that it is possible for people to induce rules and concepts when put into problem-solving situations unprepared (Bruner, 1966).

3. **Psychomotor Domain:** The psychomotor domain involves the learning of motor skills that require eye-hand coordination, such as typing, riding a bike, and sharpening a pencil. Driving a car is a good example of a psychomotor task as a new driver tries to learn eye/hand, eye/foot coordination to the point of automaticity in order to make the car move and respond according to moment-to-moment demands. Demonstration coupled with lots of practice remains an effective instructional strategy for the psychomotor domain because most motor skills involve the mastery of physical tasks that are procedural in nature. Media that possess motion, such as films, computer animation,or a real person, are logical choices for the delivery of instructional materials in this domain. For example, the military has long used films to train recruits to do tasks such as how to take apart and put back together weapons, such as rifles and machines guns (Spangenberg, 1973). Computer animation permits the visualization of the many stages of a task over time in concrete ways.
4. **Affective Domain:** The affective domain is best thought of as a person's attitudes, beliefs and value systems (Keller, 1983). "Choose" is the key action word for describing behaviors in the affective domain. Attitudes are often reflected in the free-choice patterns of people (Maehr, 1976). Most graphics used in magazine, newspaper, and television commercials deal with the affective domain. Some are very blatant, especially those targeted for certain subgroups, such as those using football or basketball players as role models to promote a product to teenage males. Other graphics present very pleasant, appealing, or highly interesting images (often with implied or expressive sexual connotations), which try

to capture a person's attention for a few seconds. Still other visuals may try to associate a certain mood or feeling, such as power or success, with the product. Very few visuals actually provide consumers with accurate product information. Billboards, particularly in highly populated urban areas, are notorious for tailoring their messages to the general profile of people living in the neighborhood, to the point of being stereotypic.

5. **Cognitive Strategies:** Cognitive strategies deal with personal mental activities that govern and control other mental operations. Gagné has called these executive control functions. Cognitive strategies originate with each individual. For example, think about what study strategies you use and why you use them. Many students simply read and reread text in order to remember it instead of taking the time and effort to learn more effective and efficient study strategies. Much of the literature dealing with metacognition (thinking about thinking) refers to cognitive strategies (Flavell, 1985). Cognitive strategies probably represent the least understood domain of learning.

Visual cognition

Visual cognition includes all the mental processes involved in the perception of and memory for visual information. Perception is the process of selectively attending to and scanning a given stimulus, interpreting significant details or cues, and, finally, perceiving some general meaning (Levie, 1987). Memory for visual information involves the cognitive processes of storing and recalling information from visual stimuli. It is difficult to pinpoint where perception ends and cognition begins. For this reason, we will deal with the issues of perception and memory independently. Visual perception is the process of being able to selectively attend to and then subsequently perceive some meaning from a visual display. All the senses are involved in perception, although the visual sense is usually stressed in most perceptual theories. Most people usually think of visual perception in terms of human physiology, or the "mechanics of seeing," such as how the eye receives visual stimuli, and converts and transmits this information as an electrochemical signal along the optic nerve until it reaches the visual cortex of the brain,. However, visual perception is "more than meets the eye." Certainly, the physiology that accounts for perception is remarkable; however, it's not the issue here. Instead, we are concerned with what happens to the information once it reaches the processing centers of the brain. Visual perception is far from an objective process and instead is based on all our previous knowledge and experiences. The use of prior knowledge to guide perception is known as knowledge-guided perceptual analysis, better known as top-down processing.

Visual perception is not like taking a photograph with a camera. Visual perception is largely concerned with visually recognizing shapes and patterns of objects directly in our visual field. There are several traditional theories of pattern recognition, such as template matching and feature models. All of these traditional approaches assert that knowledge about the regularities of the world is used to limit the number of possible recognizable shapes from which the perceptual system can choose. Gestalt psychologists from the 1920s, such as Max Wertheimer, Kurt Koffka, and Wolfgang Köhler, were among the first to be interested in visual cognition. Whereas one might define perception on the basis of the individual elements (structuralism) in the visual display, Gestalt psychology defined a series of perceptual principles based on global characteristics. These principles are still useful in studying pattern recognition, where the total is more than the sum of the parts. Four gestalt principles are still particularly relevant to designing instructional visuals. The first principle, closure, is based on the idea that humans naturally look for meaning. This principle accounts for the phenomenon of seeing dead presidents in fluffy white clouds.

The other three Gestalt rules for the organization of visual information are the principles of **proximity, similarity,** and **continuity**. The principle of proximity states that objects physically closer to one another will be perceived as being grouped together in some meaningful way. One quickly judges that there are five columns of five dots each, simply because of the spatial distances. The principle of similarity simply states that similar objects also will be grouped together in a meaningful way. People perceive meaning from animated visuals when they are tricked into seeing something that really is not there. Certain perceptual factors help to explain this phenomenon (Rieber & Kini, 1991).

One approach to what we see comes from the psychology of sensation, perception, and memory. Vision takes in more sensory data than any other means of sensation. The eyes constantly move in small jumps in a process called foveal vision, which brings images into focus onto the area of clearest focus of the eye, the fovea. Then, in the process called perception, the brain interprets the data. Within hundredths of a second, the eyes can take in data that the brain processes in less than half a second . However, we are not passive viewers. On the contrary, visual perception is an active, thinking process of planning for, as well as interpreting, sensory

data from the eyes. That is, perception is a cognitive activity. In the terms of Rudolf Arnheim, an influential theorist of perceptual psychology and art, visual perception "is not a passive recording of stimulus material but an active concern of the mind" necessary for human survival . The very fact that we direct our attention is an important part of visual perception. As we look around, we find focal points. A common example is walking into a room crowded with people. As we enter, we do not perceive everything in the room at once or equally. Instead, we tend to focus on a few items, such as a window, one small knot of people, or a person seated in a chair. In doing so, we ignore much of the other sensory information, a process called filtering. That filtering presumably "protects the mind from being swamped with" irrelevant information (Arnheim 25-26). As soon as we distinguish something in our field of vision, our past experience—including genre knowledge, which will be described later— comes into play, seizing on and interpreting the area of focus (Kostelnick and Roberts, 48-49). We use our vision to accomplish goals. We have an idea of what we will and want to see as we look around.

Readers take in a document's visual design and images immediately. Image memory—that is, our memory of particular images as well as our own constructed "mental images" of pictures, events, and visual-related words—is also one of our most enduring types of memory (Coe 77). We apply lasting memories of images across the documents we encounter. Thus the design affects readers' first impressions of genre, interest, and importance. As they continue to look at the document, whether they are reading the entire text or scanning for important points, readers continue to gather information from the visual design, which can both structure their reading and supplement the text.

To summarize, "We see what we expect to see" describes the way that we plan and focus our attention visually. Many studies of eyewitness accounts of crimes confirm what Arnheim theorized: Our ability to focus comes with the ability to filter out visual information that does not seem relevant at the time, plus the ability to interpret what we do focus on only in terms of what is familiar to us. It helps to put this active, planning, filtering behavior into more memorable terms.

Perceptual Factors Related to Animation

Motion perception research has a long history. Animation is an example of **apparent motion**, or the phenomenon of seeing motion when there is actually no physical movement of an object in the visual field (Ramachandran & Anstis, 1986). In contrast, a person perceives **real motion** when a moving object actually triggers visual detecting neurons (Schouten, 1967). Apparent motion results when two or more static objects, separated by a carefully determined distance, are alternately presented to the observer over time. Even though there is no actual motion of the image on the eye's retina, the visual system perceives motion by combining this discretely presented information into a smooth and continuous set. When the conditions are just right, the mind fills in the gaps between the frames, resulting in the *perception* of continuous motion, even though it is only being confronted with a rapid series of *still* images. You see examples of apparent motion everyday, such as when moving arrows created by carefully timed neon lights try to attract your attention to a particular store. The most intensively studied version of apparent motion is known as **stroboscopic** motion, or the motion perceived when two lights are presented at different times and different locations (also called beta movement) (Kaufman, 1974; Schiffman, 1976). Stroboscopic motion has a critical threshold of about 16 frames per second in order for it to be *perceived* as smooth and continuous; anything less results in choppy or jumpy displays. Even the most inexpensive computer systems available today easily match this critical rate. The **phi phenomenon** is closely related to stroboscopic motion (Schiffman, 1976). This illusion of motion is produced when stationary lights are turned on and off in sequence. Examples include the use of carefully sequenced lights to create dynamic visuals around billboards, theater marquees, scoreboards in sports arenas, and other "Las Vegas-like" displays. The phi phenomenon also accounts for any animation on computer displays produced by the coordinated switching of pixels. Several perceptual theories help to explain both stroboscopic motion and the

phi phenomenon. (It is interesting to note that other examples of apparent motion have been identified, such as the delta phenomenon, produced when the brightness of the stimuli is varied [William, 1981].)There are many factors that determine the nature of apparent motion. However, three are particularly relevant to computer animation: (1) the time between projection of the separate displays; (2) the light intensity of the displays; and (3) the spatial distance between each of the displays. For example, no motion will be perceived when two lights are alternately presented at too slow a rate. Instead, one simply sees *two* lights being switched on and off. If the lights are alternated at too fast a rate, then the two points are perceived simultaneously and, again, no motion will be perceived. However, if the two lights are alternated at just the right speed, the perception that a *single* object is moving back and forth will be induced. The light intensity of the two points and the space between them must also be just right. Although each of the three factors described above must be considered individually,"Korte's law" states that apparent motion can only result when these three factors are properly synchronized (Korte, 1915, as cited in Kaufman, 1974; and Carterette & Friedman, 1975). If one factor is held constant, then the other two factors will vary proportionally (though not necessarily directly). For example, if light intensity is held constant, the distance between the displays must vary proportionally to the amount of time between each display for apparent motion to be produced. So, as the displays are moved closer together, the time between the projection of the displays must also decrease. Many other factors, such as spatial orientation, depth, color, size, shape, and texture, also impact the perception of apparent motion, but the influence of each of these factors is considered minimal. In order for a group of intermittently displayed objects to be perceived as *one* object in continuous motion, the visual system must trigger a psychological process called **correspondence** (Mack, Klein, Hill, & Palumbo, 1989; Ramachandran & Anstis, 1986; Ullman, 1979). In this process, the brain imposes *one* organized and meaningful pattern to the separate images. For example, an animated scene of a person riding a bicycle across the computer screen may actually consist of 30 separate frames. Although the visual system "sees" all 30 frames, an individual *perceives* only one object in motion. The correspondence process cognitively "assembles" the separate images into one meaningful set; motion becomes the "glue" in this assembly. Explaining how the visual system achieves correspondence detection is controversial in visual cognition research. Perceptual psychologists have shifted from the view that apparent motion is the result of a single psychological process over the years to a two-process theory where two distinctly qualitative processes are at work: long-range and short-range apparent motion (Braddick, 1974, as cited in Petersik, 1989; Julesz, 1971). Motion is perceived using either or both of these processes. (Research indicates that there is competition between the two processes when each is equally stimulated. Researchers have not yet adequately determined the conditions necessary to trigger one or both processes.

Types of instructional graphics

Given the popularity and flexibility of graphics in instruction, a way is needed to make sense out of how they can be used to improve instructional materials. First, there is a need to describe the types of graphics commonly used in instruction. Second, there is a need to describe the various functions of each type when applied in an instructional or training setting. We will use a simple classification system that describes the types of visuals commonly used in instruction. These categories describe, in general, how graphics convey information and meaning, but do not speak directly to how they can be applied in instruction. Applying these graphics types to instruction is a separate issue and will be addressed later. The three types of graphics are classified as representational, analogical, and arbitrary.

Representational Graphics

Representational graphics share a physical resemblance with the object they are supposed to represent. For example, a passage of text explaining the purpose and operation of a submarine probably would be accompanied by a picture of a submarine. Representational visuals range somewhere between highly realistic9photographs) and abstract (line drawing). The most common examples of realistic representational visuals are photographs or richly detailed colored drawings, the latter of which are currently the highest quality images that can be generated on microcomputers. Multimedia systems present opportunities to incorporate near-photographic images, such as composite video images taken from videodisc or videotape players, or from computers with adequate memory. Although many would argue that the quality of these video images is much lower than photographs, the issue of representational integrity is largely a function of the context. For example, although most microcomputers could represent a realistic enough submarine for most purposes, the same quality would hardly suffice for an art lesson in which fine details of the Mona Lisa are featured and discussed. Actual photographic images can be made available in multimedia systems that integrate slide/tape projectors (Pauline & Hannafin, 1987).

Analogical Graphics

The range of representational visuals is probably the most common type of illustration used in instructional materials today, including computer environments. However, presenting students with an accurate representation of something may not always be the best learning tool. One such example is when students have absolutely no prior knowledge of the concept. Analogies may be effective instructional strategies in such instances. For example, if students do not understand the idea that a submarine is able to dive under water, it might be more appropriate to first suggest that a submarine is analogous to a fish so students understand this characteristic. However, a better analogy would be a dolphin because it, like a submarine, must surface occasionally for air, or better yet, a whale, because of its size. Of course, a submarine is not a dolphin or a whale, so learners must understand that the analogy is being used only to represent similarities. Differences do exist, and it is important that students understand the analogy's limits. Educational psychologists often describe learning as a process that goes from the known to the unknown. An analogy can act as a familiar "building block" on which a new concept is constructed. Of course, if the student does not understand the content of the analogy, then its use is meaningless and confusing. Worse yet, students may form misconceptions from an inadequate understanding of how the analogy and target system are alike and different. The usefulness of the analogy, therefore, is

largely dependent on the learner's prior knowledge. Graphics can help learner's see the necessary associations between parts of the analogy.

Arbitrary Graphics

Arbitrary graphics offer visual clues, but do not share any physical resemblances to the concept being explained. In a sense, this category acts as a "catch-all" for any graphic that does not offer any resemblance of real or imaginary objects, but yet contains visual or spatial characteristics that convey meaning. Examples range from the use of spatial orientations of text, such as outlines, to flowcharts, bar charts, and line graphs. All information can be represented as existing on a continuum. At one end are the most concrete representations — real objects. Nearby are highly realistic representational pictures. At the other end are spoken and written words that represent the most abstract form of communication. In the center of this continuum would be arbitrary graphics. Charts and graphs are probably the most common types of arbitrary graphics. Charts refer to tables or information contained in table-like formats. Examples include taxonomies, such as the classification of animal groups, language families, or baseball teams. The purpose of a chart is to organize and display information by one or more categories or fields. All of the information in a chart is discrete (categorical) data. A "cognitive map" is an interesting example of a chart that has much support from research as a learning tool. Cognitive maps are part of an instructional technique called spatial mapping . The purpose of cognitive maps is to show graphically the relationships and hierarchies of related ideas and concepts. Each fact or concept is called a node and is connected to other nodes by links that indicate the relationship between the nodes. Often, these links are then labeled further to clarify the relationships between the connected nodes. Similarly, graphs also logically represent information along one or more dimensions, but the main purpose of graphs is to show relationships among the variables in the graph. The most common types of graphs are line graphs and bar graphs, although many other types abound, such as pie graphs, scatterplots, etc. Another difference between charts and graphs is that at least one of the variables in a graph usually will be continuous. Continuous data contain an infinite number of points along a continuum. Height or weight is continuous variables. Someone's height may be reported as six feet, one inch, but this is just for convenience because height can never be measured exactly.

It should be noted that graphics are frequently constructed to contain characteristics of two or more of the three graphic types. Representational and arbitrary graphics are often mixed, such as the use of arrows and labels superimposed on a drawing. Pict-o-graphs (or isotypes), another popular type of graph (especially in magazines and newspapers), overlap characteristics of representational and arbitrary graphics. The overlay of representational and arbitrary graphics onto geographical maps is one of the oldest mixtures of graphical forms.

An understanding of the three graphic types is prerequisite to an understanding of how they can be used in instruction. As one might guess, there are a myriad of specific ways that each of these graphics can be used in any one instructional situation. The next section begins the discussion of the important issues surrounding *instructional* applications of graphics, such as *should* one or more graphics be included in an instructional design and, if so, what role or function should those graphics serve. A necessary first step in the design of effective instructional materials and, subsequently, instructional graphics, is the determination of the lesson goals and objectives. The most common vehicle for describing learning goals in any one lesson is instructional objectives, also known as performance objectives. The purpose of instructional objectives is to describe as clearly and precisely as possible what the learner should be able to do *at the completion of the lesson*. If constructed properly, objectives not only serve as an appropriate guide in the design of instructional strategies and materials, but also indicate appropriate methods of evaluating whether the objectives have been met.

Principals of designing visual elements

Designing is usually a rearrangement of an idea observed and recorded previously. No matter how simple the design may be, there are certain principles that must be applied.

1. Principle of unity: To achieve the visual unity is a main goal of graphic design. When all the elements are in agreement, a design is considered unified. No individual part is seen as more important than the whole design.

   Methods of achieving unity are i. Proximity ii. Similarity iii. Rhythm iv. Altering the basic theme achieves unity and helps keep interest.

2. Principles of point, line and plane: Point, line, and plane (PLP) are the three most basic shapes in visual design and a good design contains all three. The key to use PLP is making the shapes overlap and share the elements.

   i. Points: In design, appoint can be the smallest unit of marking not simply a dot.

   ii. Line: The trace of a point in motion, a thin stroke, or even a narrow plane can be considered as a line.

   iii. Plane: It can be perceived as a traces of a line in motion like dragging a piece of chalk across a black board sideways.

3. Principle of Balance: It is a state of equalized tension and equilibrium which may not always be calm. The balance may be of different types.

   i. Symmetry

   ii. Asymmetrical produces an informal balance that is attention attracting and dynamic.

   iii. Radial balance is arranged around a central element. The elements placed in a radial balance seem tpo radiate out from a central point in a circular fashion.

   iv. Overall is a mosaic form of balance which normally arises from too many elements being put on a page. Due to lack of hierarchy and contrast, this form of balance can look noisy.

4. Principle of Hierarchy: A good design contains elements that lead the reader through each element in order of its significant. The type and images should be expressed starting from most important to least important.

5. Principle of Scale: Using the relative size of elements against each other can attract attention to a focal point. When the elements are designed larger than life, scale is used to show drama.

6. Principle of dominance: Dominance is created by contrasting size, positioning, color, style, or shape. The focal point should dominate the design with scale and contrast without scarifying the unity of whole.

7. Principle of similarity and Contrast: Planning consistent and similar design is an important aspects of designer works. Too much similarity is boring but without similarity important elements will not exist and an image without contrast is uneventful so the key is to find the balance between similarity and contrast.

Similarity:

   i. Build a unique internal organization structure.

   ii. Manipulate the shape of images and text to correlate together.

   iii. Develop a style manual and stick with format.

Contrasts:

   i. Space: Filled/empty, Near/far, 2D-3D

   ii. Position: Left/Right,isolated/grouped, centred/off-centred

   iii. Form: Simple/complex, beauty/ugly, whole/broken

iv. Direction: Stability/movement

v. Structure: Organized/chaotic, Mechanical/Hand-Drawn

vi. Size: large/small, deep/shallow, fat/thin

vii. Color: grayscale/color, light/dark

viii. Texture: Fine/coarse, smooth/rough, sharp/dull

8. Principle of repetition: Repetition with variation is interesting without variation repetition can become monotonous.

Useful methods of producing graphic displays

For the benefit of those who still like to use the chalkboard to display graphic material such as maps and diagrams, let us now examine some of the 'tricks of the trade' that can be used to produce such displays. Some people, of course, have no need to resort to such methods, since they possess the artistic and graphic skills to produce all such material freehand, but most of us need all the help we can get.

The grid method: This is one of the simplest methods of producing an enlarged version of graphic material, whether on a chalkboard, marker board, or any other medium. It involves covering the material to be copied with a pattern of square grid lines, either by drawing the lines on the material itself or by covering it with a transparent sheet on which the grid has been drawn. (The latter method is recommended, since the grid, once prepared, is available for future use.) If a similar grid, scaled up by whatever factor is required, is now lightly drawn onto the surface on which the enlarged copy is to be made (or, even better, projected onto the surface using an opaque or overhead projector), the resulting grid lines will probably enable even the least talented of artists to produce a reasonable copy of the original material. Many roller-style chalkboards have a section which is grid referenced so that enlargement becomes a matter of technical accuracy rather than artistic skill.

The projection method*:* This is another standard technique that can be used to produce enlarged versions of graphic or photographic materials on surfaces of all types. It involves projecting a suitably-enlarged image outline and whatever other detail one wish to reproduce. Note that the method can be used with both transparent and opaque originals by using the appropriate type of projector - a slide projector for photographic slides, a filmstrip projector for filmstrip frames, an overhead projector for large transparencies and an art-aid or opaque projector for photographic prints and other opaque items. Also note that an ordinary overhead projector can be used as a makeshift opaque projector by placing the material to be copied on the platen, image side upwards, and illuminating the material from above using a portable lamp of some sort.

The template method: Another technique that can be used to draw outline figures on both chalkboards and marker boards is the template method. This is particularly useful in cases where standard shapes (eg maps, scientific apparatus, geometrical figures or dress patterns) have to be drawn repeatedly with some accuracy. It involves preparing a template of the shape using some suitable stiff, lightweight material such as thin sheet metal, thick card, plywood or rigid plastic, a template that can then be placed on the board and traced round whenever the shape has to be drawn. Templates can be produced from smaller originals by drawing them on a sheet of the chosen material using the projection method described above. It is, incidentally, a good idea to fit such templates with a handle of some sort to make it easier to hold them against the board while in use.

The pounce pattern method: This is another method that can be used to reproduce standard shapes which have to be drawn repeatedly and with accuracy. It involves first producing a line drawing of the required shape on a large sheet of paper or thin card, and then punching small holes along the lines at regular intervals (between 1cm and 2cm apart, depending on the detail required). With paper, this can be done using a special tool fitted with a spiked wheel, which is run along the lines when the paper is placed on a suitable surface (eg a sheet of soft wood). With card,the holes can be punched out using a leather worker's punch or similar device.

If the completed pounce pattern is now placed flat against the surface of the chalkboard, held in position using strips of adhesive tape, and the lines to be drawn lightly tapped with the face of a dusty chalkboard eraser, the outline of the shape will be transferred onto the board in the form of lines of dots. These can then be joined up to produce the required figure. By preparing such pounce patterns before lessons, it is possible to impress classes considerably by the ease and skill with which you apparently draw complicated diagrams freehand.

Preparation of non-projected visuals

Adhesive displays

Another major class of non-projected display media that we will look at consists of those where display material is stuck to the display surface in some way (other than by drawing pins or glue). The most important members of the class are feltboards, hook-and-loop boards and magnetic boards, which will now be examined in turn.

Feltboards : The feltboard (which is also known as the flannel-board or flannel-graph) relies on the fact that shapes cut out of felt, flannel or similar fabrics will adhere to display surfaces covered with like material. Such systems can be used both to create permanent or semi-permanent wall-mounted displays, but their most important application is in situations requiring the movement or rearrangement of pieces. They are, for example, ideal for displaying things like table settings, demonstrating changes in plant layouts or corporate structures, showing how words can be joined together to form phrases and sentences, and illustrating basic arithmetical and geometrical concepts. Feltboard materials, designed for use in a wide range of instructional situations, are available commercially, but it is again a very simple matter to create your own. The required shapes can simply be cut from any convenient sheet of felt or flannel (of a different colour from the display surface) and can be made even more cheaply from felt-embossed wallpaper. If you are planning to make regular use of home-produced feltboard displays, purchase of a roll of this wallpaper will provide you with an almost unlimited supply of the necessary raw materials at very low cost - especially if you can get hold of an 'end-of-line' bargain roll. Use of embossed wallpaper for the preparation of feltboard display materials has the added advantage of providing a light surface on which words or letters can be written, images drawn, etc. If you want to produce more rigid display materials, these can be cut from thin card and then backed with felt or embossed wallpaper in order to make them stick to the feltboard.

Hook-and-loop boards: The hook-and-loop board (which is also known as a teazle board or teazle-graph) works on the same basic principle as the feltboard. In this case, however, the display materials are backed with special fabric (such as velcro) which incorporates large numbers of tiny hooks, while the display surface is covered with material incorporating tiny loops with which the hooks can engage. This creates a much stronger bond than that which is formed between two pieces of felt, thus allowing much heavier display materials to be attached to the surface of a hook-and-loop board. Such boards can be used for much the same purposes as feltboards, but only offer a real advantage over the latter in situations where the material being displayed is heavy - demonstrating the components of an actual piece of equipment. Hook-and-loop display boards can be made in exactly the same way as feltboards, ie by getting hold of a suitable piece of fabric (available from educational supply companies) and either pinning this to a convenient wall or bulletin board or producing a portable board by sticking or pinning it to a piece of plywood or hardboard.

Magnetic boards. : Even more useful and versatile than feltboards and hook-and-loop boards are the various forms of magnetic board. These come in two main forms - the magnetic chalkboards that were described earlier and magnetic marker boards (sheets of ferromagnetic material with specially-painted light surfaces on which material can be written or drawn using suitable markers or pens). Both types of board enable display items made of (or backed with) magnetic material to be stuck to and moved about on their surfaces, and both enable this movable display to be supplemented by writing or drawing on the board. Thus, magnetic boards can be used to produce highly sophisticated displays that enable movement and change in systems to be clearly demonstrated to a class or small group. They are an ideal medium for demonstrating military tactics

or carrying out sports coaching. Both magnetic chalkboards and magnetic marker boards can be made using readily-available materials, and, although such boards will probably not prove as satisfactory as commercially purchased versions, they can be used to fulfil exactly the same basic functions. In both cases, the display surface should be made from a thin sheet of ferromagnetic material such as mild steel, which should preferably be mounted on a thicker sheet of wood or chipboard in order to give it the required rigidity. To produce a magnetic chalkboard, the surface should be painted with a suitable dark-coloured matt paint, while to produce a magnetic marker board, a suitable light-coloured silk or gloss paint should be used. There are two main ways of producing such materials. The first is to make them out of special 'magnetic rubber', which is available in sheet and strip form. The second is to make them out of non-magnetic material such as stiff card and then to stick strips of magnetic rubber or small magnets to their backs, so that they will adhere to the board. A wide range of ready-made materials such as magnetic letters and numbers that can be used to form displays is also available from educational suppliers.

Charts, posters and similar flat displays

The various forms of chart, poster and other flat pictorial display have always been among the most useful and versatile visual aids at the disposal of teachers and instructors of all types. Let us now look in turn at some of the more important varieties.

Flipcharts : These constitute a simple and, when used in an appropriate context, highly effective method of displaying information to a class or small group. Such charts consist of a number of large sheets of paper, fixed to a support bar, easel or display board by clamping or pinning them along their top edges so that they can be flipped backwards or forwards as required. Such charts can be used in two basic ways. First, they can be used to display a succession of pre-prepared sheets, which can be shown in the required order either by flipping them into view from the back of the suspension system one by one, or by revealing each successive sheet by flipping the previous one over the back of the suspension system out of the way. If the former method is to be used, as in Figure 7, the sheets should be clamped to the display system in reverse order of showing, ie with the one to be shown last uppermost. With the latter method, the sheets should be clamped to the display system in the correct order of showing, ie with the one to be shown first uppermost. When preparing such flipchart sequences, it is best to keep the message or information on each sheet fairly simple, since this increases their impact. Also, it is obviously essential to make sure that they can be read or seen clearly by all the members of the class or group; you should check this by inspecting them from the back of the class, from the furthest distance in the room from which they have to be viewed, or from appropriate positions around table-top versions.

The other main way in which flipcharts can be used is by providing an instantly-renewable series of blank surfaces on which material can be jotted down on an impromptu basis in the course of a lesson, group discussion or other activity. They can, for example, be used to list replies from class members to questions or ideas generated by buzz groups.

When a series of flipcharts is produced arising from discussions and questions, it is often useful to arrange that they can continue to be visible. This can be done by using 'Blutack' or adhesive tape to stick completed charts onto doors, walls, window frames and other surfaces of the room. With flipchart pads, there are usually two holes punched near the top of the chart that are then placed over protruding bolts built into the flipchart easel. A bar is then screwed on, to retain the flipchart pad securely. However, when you intend to paste up flipchart sheets round the room, it is useful to remove the bar, so that you can tear off sheets neatly at the very top of each sheet, leaving the holes intact. This means that if you later wish to bring back a particular chart for detailed discussion, you can replace it over the bolts on the easel. (If the metal bar is left in place, and flipcharts are simply torn off, the holes will be lost, and a ragged edge will be obtained at the top of the charts, giving an impression of untidiness or unprofessionalism).

Charts and wallcharts : The various forms of chart and wallchart have always been popular in all sectors of education and training because of their versatility and ease of use, and, even with the spread of more sophisticated visual aids such as slides, videos and multimedia, are still capable of playing an important role in such work. Although the distinction between charts and wallcharts is sometimes a bit blurred, the former term is generally taken to refer to displays on large sheets of paper or cloth that are designed to be shown to a class or group in the course of a lesson or briefing, as with a military manoeuvre. The latter term is used to describe similar displays that are pinned to a wall or bulletin board and are mainly intended for casual study outside the context of a formal session.

Another distinction between the two types is that the material on charts is usually larger and easier to see or read than that on wallcharts, since the former has to be clearly distinguishable or legible at a distance whereas the latter can be studied at close quarters. Apart from this, however, the principles that underlie the design of the two are essentially the same.

One of the great advantages of both charts and wallcharts is that they can be made fairly large, and can thus contain far more complicated and more detailed displays than it would be possible to incorporate on (say) an overhead transparency or a 35mm slide. They can, for example, be used to show highly-detailed maps (one of their most important and most universal uses), and detailed structural, taxonomic, and organizational diagrams of all types.

Although a wide range of charts and wallcharts is available commercially or as good-will 'giveaways' from industrial and other organizations, it is still often necessary to make one's own in order to cover a given topic in a specific way - particularly if the topic to be taught is of a specialized or unusual nature. Before embarking on the task of making up a chart or wallchart, however, it is always worthwhile investigating whether one that could be used for the job you have in mind is already available, either within your own organization or from an external source (from a central resources centre, an educational supplier, an industrial or other organization, and so on); if it is, you could save yourself (and your Institution's technical and graphics support services) a great deal of time and effort.

If you do decide to go ahead with the production of your chart, you should bear the following basic principles in mind:

- Consult technical and graphics support staff and use their expertise if it is available.
- Make the chart and all items on it big enough to be seen clearly by the entire class or group that you will be using it with, or, in the case of a wallchart, in the context within which it is to be used.
- Aim for maximum clarity, using a layout and printing technique that make the 'message' that you are trying to get across perfectly clear.
- Do not make the chart unnecessarily complicated, especially with a chart designed for display to a largish group during a lesson; too much detail may well lead to loss of clarity and/or confusion.
- Try to make the chart visually attractive, using colour if at all possible.

In many cases, the main graphic content of a chart or wallchart can be produced using simple drawing aids such as a ruler, T-square and compasses. In some cases, however, it may be necessary to reproduce a complicated drawing or schematic diagram, often from a smaller original contained in a book or magazine. In such cases, two of the techniques suggested earlier for producing similar drawings on chalkboards and markerboards - the grid method and the projection method -should prove useful. If the original drawing is larger than the version that you want to produce, however, a variation of the projection method known as reverse projection may be employed. This makes use of the fact that all optical systems are reversible, so that a system such as the lens of an overhead projector which is normally used to throw an enlarged image of the material on its platen onto

a screen, can also be used to produce a reduced image of a poster, chart, etc on the surface of the platen. This technique, which may have to be carried out in a partially-darkened room, involves illuminating the material to be copied with floodlights and copying the resulting reduced image behind a suitable shield.

It is also now becoming increasingly practical to use desktop-publishing systems to produce graphic display materials. For example, with Macintosh computers, there is a range of graphic packages available, including 'MacDraw' and 'PowerPoint', and there are also libraries of graphic materials available in software such as 'HyperCard'. With modern laser printers, it is generally possible to print out large copies of diagrams, charts, pictures and so on, after editing them on-screen as desired. The copies can then be pasted onto large sheets for display.

If you possess the necessary graphic skills, it is possible to produce perfectly clear and acceptable lettering on charts by freehand use of appropriate pens or markers. Most people find this difficult, however, and prefer to use one of the many lettering aids that are available. These include the following:

- **Instant lettering**, in the form of dry transfer letters on plastic sheets that can be transferred to the work by rubbing with a burnisher, rounded pencil point or ballpoint pen. This produces high-quality results if used properly, but is expensive and time-consuming. The method is now very rarely used, since electronic methods are both cheaper and much easier to use.
- **Stencils**, usually in the form of transparent plastic strips carrying the complete alphabet in a given style and size. These can produce reasonably good results,but not of the quality of transfer lettering or the other methods described below. They have again largely been displaced by electronic methods.
- **Lettering machines**, which operate on the 'Dymo' principle and can be used to print lines of lettering on special adhesive ribbon; the ribbon can then be cut into sections, and laid out in the required way. These can also produce very good results, but are again comparatively expensive to use. They have again been largely superseded by electronic methods.
- **Phototypesetting**: use of a word processor-like device to compose text, which is produced in the form of a photographic negative that can be used to produce a positive print of whatever size is required. This again gives excellent results, but the equipment is expensive.
- **Desktop publishing**: use of desktop-publishing techniques to generate text in the required form, the final copy being produced using a laser printer. This is now by far the most commonly-used method.
- **Zoom photocopying**: use of a photocopier with a zoom enlargement facility to produce text of the required size from smaller copy.

Adding colour to charts can be done by a wide range of methods, some of the most useful of which are outlined below.

- Poster paint, applied with a brush: the standard method of producing bold colours on a poster or chart.
- Water-colour paint: useful for more subtle colours, or for producing subdued washes of colour.
- Coloured adhesive paper: this is available in a wide range of colours; if cut to the shape required, it can produce a sharpness and finish that is difficult to achieve using paint; it is also relatively cheap.
- Coloured transfer films: these can be used in the same way as adhesive paper, but are much more expensive.

In many cases, it is possible to make use of ready-made material such as photographs or diagrams from magazines in the preparation of charts and wallcharts. This can not only save a great deal of time, but can also produce excellent results. Copyright should not be a problem in standard up-front teaching situations, although it will almost certainly need to be checked if commercial gain is involved. Specially-prepared photographic prints can also prove useful on occasions, especially on wallcharts and other permanent or semi-permanent

displays. Such material can also be increased (or reduced) in size if necessary by making use of a 'zoom' photocopier.

Posters : These are similar in many ways to charts, but are usually smaller, simpler and bolder in content and style. Their main uses in the learning environment are as a means of providing decoration, atmosphere and motivation, although they can also be used to make or remind students of key points. As with charts and wallcharts, ready-made posters are available from a large number of sources - very often free of charge. Nevertheless, there are occasions when it is necessary to produce 'home-made' posters for specific purposes. When doing so, you should bear the following points in mind.

- To attract attention, a poster should be dramatic, with any prominent or central feature(s) standing out sharply.
- Having caught the viewer's attention, the poster should get across its message clearly and quickly; this message should therefore be a simple one, capable of being taken in at a glance.
- A poster should also be visually attractive, even though its subject matter may be anything but pleasant (warnings about health hazards, the dangers of equipment, etc).

Apart from these points,the techniques for producing posters are basically the same as those described above for producing charts and wallcharts.

Lamination: Posters, charts and wallcharts can all be laminated. Lamination involves the addition of a transparent plastic coating by passing display materials through heated rollers.

The advantages of laminating are:

1. **Preservation.** Materials are kept rigid and in mint condition.
2. **Professional appearance.** The gloss and sheen of lamination are literally that, reflecting commercial and conference standards.

The disadvantages of laminating are:

1. **Reflection.** The surface produces glare, providing reduced legibility.
2. **Subsequent mounting.** Lamination makes materials heavier and smoother. Adhesive tape and pliable pads such as Blutac no longer work, so that pins or combination velcro are required.

Three-dimensional display materials

The final group of non-projected displays that we will look at differ from those described so far in that they are all three-dimensional. The group includes four basic types of materials - mobiles, models, dioramas and realia - which will now be described in turn.

Mobiles: A mobile is, in essence, a three-dimensional wallchart in which the individual components can move about. Instead of displaying a related system of pictures, words, etc on the flat surface of a wall, they are drawn on card or stencilled on metal, cut out or moulded, and hung independently from the roof (or a suitable beam) using fine threads. The resulting display, which turns and changes shape as it is affected by random air currents, acquires a vitality which can never be produced in a flat display of the same material. Such mobiles can be suspended in a corner of any learning room, where they will not get in people's way, but will still be clearly visible.

Producing a mobile involves three basic stages.

1. ***Conceptual design.*** This involves choosing the basic theme for the mobile, deciding what items to include, and establishing the patterns that you want to illustrate.

2. ***Production of components.*** This involves designing and producing the individual components, which may be simple word cards, cut-out models, plastic rods, symbols or even items of realia (which can make extremely effective mobiles).
3. ***Assembling and mounting.*** This is the most difficult part, and is best done by first assembling the simplest groups of items, then combinations of such groups,and so on until a balanced, freely-moving display is achieved. At each stage, the correct position for suspension should be determined by trial and error (a knowledge of basic physics helps here!). The final display should be hung from a hook or drawing pin firmly fixed into the ceiling, or from a wooden rod fixed across a corner of the room at a suitable height (such a rod can be used as a permanent suspension system for mobiles).

Models : Models (recognizable three-dimensional representations of real things or abstract systems) can play an extremely useful role in a wide range of instructional situations. They are, however, particularly useful in three specific roles, namely, as visual support materials in mass instruction, as objects for study or manipulation in individualised learning, and as construction projects for individuals, small groups or even entire classes. When using models in the first of these roles, however, it should be remembered that even the best three-dimensional model invariably appears two-dimensional except to those who are very close, so it is usually worthwhile getting the learners to gather round the model when its salient features are being demonstrated; unless you do this, you could probably achieve the same objectives in most cases by using a two-dimensional representation such as a slide, OHP transparency or projected computer graphic. Some specific applications of models are listed below:

- They can be used to reduce very large objects and enlarge very small objects to a size that can be conveniently observed and handled.
- They can be used to demonstrate the interior structures of objects or systems with a clarity that is often not possible with two-dimensional representations and at a cost that is not yet matched by virtual-reality products.
- They can be used to demonstrate movement - another feature that it is often difficult to show adequately using two-dimensional display systems and that is more expensive in virtual-reality experiences.
- They can be used to represent a highly complex situation or process in a simplified way that can easily be understood by learners; this can be done by concentrating only on essential features, eliminating all the complex and often confusing details that are so often present in real-life systems.

The range of methods available for making models for instructional purposes is enormous, but readers may find some of the following standard techniques useful.

- Use of commercially-available kits of parts, such as the ball-and-spring systems that are used to make models of molecules and the various types of tube-and-spigot systems that can be used to make models of crystals.
- Use of construction systems such as ‘Meccano’ and ‘Fischer-Price’ to make working models.
- Use of inexpensive materials such as cardboard, hardboard, wood and wire to make up static models of all types (models of buildings, geometrical bodies, three-dimensional shapes, and so on).
- Use of materials like modelling clay and plasticine to produce realistic models of animals, anatomical demonstrations, and so on.
- Use of materials like Plaster of Paris and papier maché to produce model landscapes.

Dioramas : These are still-display systems that combine a three-dimensional foreground of model buildings, figures etc. with a two-dimensional painted background, thus creating a highly-realistic effect. They can be used in the teaching of a wide range of subjects, including:

- History, drama, religious studies (representations of historical or dramatic scenes, stage sets, battles, etc.).
- Architecture, geography and geology (representations of buildings, towns, landscapes, pre-historic landscapes and scenes, etc.).
- Biology and natural history (representations of plants or animals in their natural habitats).

Although sophisticated dioramas of the type that are seen in museums can be extremely expensive, time-consuming and difficult to make up, it is perfectly possible for anyone possessing even the most basic of graphic and artistic skills to produce highly effective displays of this type. This can be done as follows.

1. Make a semi-circular base of the required size out of chipboard, hardboard, thick card or some other suitable material.
2. Make a strip of thin white card of suitable height that is capable of extending all the way round the curved side of the base, draw and/or paint the required background scene on this, and fix it to the base (eg with drawing pins).
3. Build up any landscape required in the foreground using Plaster of Paris or papier maché, and paint this in the required colour(s).
4. Produce or acquire any materials that are required for the foreground and set them in position; such materials can include model figures (cardboard cut-puts, plasticine models, etc), model buildings, model trees, model ships, tanks or other vehicles, pieces of rock, and any other materials that you feel will enhance the realism of the scene being depicted.

Realia : The supreme instructional 'model' is, in some cases, the article itself, since there are often considerable advantages to be gained from letting learners see or handle the 'real thing' as opposed to a mere representation thereof. In many cases, of course, this will not be practicable on grounds of availability, accessibility, safety, expense and so on, but there are many other cases where no such objections apply, and, in such cases, serious consideration should be given to the use of realia. Such materials can be used both to support expository teaching and in individualised- and group-learning situations, where they can provide learners with the sort of direct experience that can seldom be obtained through mediated learning, no matter how well contrived or expensive. When studying geology, for example, there are few satisfactory substitutes for actually handling and examining real rock specimens, while the same is true of many aspects of the study of veterinary science, biology, and physiology. Examining 'virtual' horses and bodies is still futuristic for most people.

The way in which one sets about getting hold of items of realia for teaching or training purposes will, of course, depend on a number of factors, including the nature of the item(s) required, the existence (or otherwise) of convenient local sources of supply, the financial resources one has at one's disposal, and so on. It is, however, often possible to acquire specific items - or even whole collections of items - at very little cost merely be exercising a little resourcefulness (eg building up a collection of geological specimens by obtaining what you can locally and persuading colleagues, relatives and friends who you know will be visiting certain areas to bring you back specific items). Other types of material can sometimes be obtained from industrial firms and other organisations, who are often only too pleased to help.

Projected visuals

Projected visuals have been long popular as media as well as entertainment. Projected visuals are media formats in which pictures are enlarged and displayed on a screen which are really suitable for all use at all grade levels and for instruction in all curriculum areas. One advantage of projected visual is that the teacher can maintain eye contact with the students. The lighted screen is a silent shout, meaning that a shout likely to be heeded by even the most reluctant learners. The large, bright image captures the students' attention as no other technology can. Years ago, equipment like overhead projectors and posters provided the common visual aids. With the evolution of multimedia, PowerPoint slide shows and portable digital projectors for showing animated clips have become known.

Overhead Projection

The first projected visual aids which come into world is OHP. The typical overhead projector is a simple device which basically consists of a box with a large aperture or "stage" on the top surface. This device makes use of transparency which later is called as acetate (individual sheet of transparent film) and overlays (sheets of transparent film).

Slides

Slide is a more modern one than OHP. It refers to a small-format photographic transparency individually mounted for one-at-time projection. The standard size of slides is 5 x 5 cm. Slides may be used at all grade levels and for instruction in all curriculum area, such as providing a tour without walking though the area, making a visual history, illustrating lectures, documenting students activities, showing people at work in various jobs, simulating a field trip, promoting public understanding, etc.

Sound-Slides Sets

While OHP and slides are not accompanied by sounds, sound-slides sets are a combination of 2x2 inch slides and audiotape which is versatile, easy to use and effective for both group and independent study. This sound slide programs may be advanced in manually or automatically. In manual operation, the visual and audio components are usually separated. The presenter needs to ensure that the visual and audio are synchronized. In automatic operation, it uses two sound tracks – one for audible narration and for inaudible tones that activate the advance mechanism on the slide projector.

Multi Image Presentation

Multi Image is the earlier form of video player. It is any visual presentation showing several images simultaneously, often using multiple screens. It may incorporate moving images, film or video but slides are used as foundation. It is heavily used in corporate communications – to impress visitors, to introduce new products, to review the year accomplishments. In education, it is usually produced for persuasive purposes like to enlist parent support for new programs, to heighten student's awareness of issues, to arouse interest in new classroom technique.

Filmstrip

A filmstrip is a roll of 35mm transparent film containing a series of related still pictures intended for showing one at a time. The standard format of film strips is the single-frame filmstrip, in which the images are printed perpendicular to the length of the film, while in 35mm slide film, the images are parallel to the length of the film. This projector has no audio accompaniment. Narrative information is printed at the bottom of each frame

or is recorded separately. As slides can be made by the teacher and students, filmstrips are better suited to mass production and distribution.

Opaque

Opaque projection is a method of enlarging and projecting nontransparent material on screen. It works by directing a very strong incandescent light down onto the material. The light is reflected upward to strike a mirror, which aims the light beam through series of lenses onto a screen. Consequently, the image on the screen is dimmer, and more complete room darkening is required. The document camera is an electronic version of the opaque projector. The image may be projected onto large screen within the room or it may be transmitted to distant sites via television. This projector is useful for many small groups or classroom-size groups that need to view printed or visual material together.

Computer Image Projection

Liquid crystal display (LCD) projections panels project computer images onto screen. This works as the same as reflective OHP, minus the transparency. An LCD panel is plugged into computer and placed onto the stage of a high-intensity overhead projector. The projector light shines through LCD panel, projecting image on a screen.

Computer based visuals

The technology is rapidly changing. Computer based visuals are becoming the standard for most technical, education or business-related presentations. Useful for large and small audience, they can convey simple as well as complex information. If we use a remote control we can change the visual while walking about the room. To accomplish this we need a data projector, a device that accepts output from a computer and projects it onto a screen. Plan to create the visuals in advance, to ensure all of the electronic components work together. Keep the visual aids visible, simple, colorful, but don't let them upstage the presentor and Justified by the content-not too many or too few slides. For effective PowerPoint shows; don't read the slides to you audience, make your text large, choose colors that make the text easier to read, don't let the text or graphics fly around too much, avoid charts and diagrams that are hard to see.

With one type of visual aid, we should follow the following guidelines

1. Keep your audience in mind
2. Be sure that visual aid contributes to your message
3. Make the visual aid large enough for the audience to see
4. Handle materials and operate equipment properly

Visual Communication Design Principle

Any visual communication form must be designed properly for the audience. Good visual communication design should attract the audience. Key design principles for visual communication are simplicity, unity, emphasis, readability, organization, balance, accuracy and clarity.

1. Simplicity: A poster, display or computer-generated slide should not be crammed full of text or images. Keep it simple. Usually especially with computer slides-the fewer the elements on the page or screen, the easier it is for audience to understand and recall the message.
2. Unity : Work to enhance harmony in all visual communication. Keep the background and text the same and use similar graphic images on all the slides for a computer-generated presentation
3. Emphasis: Similar and harmonious materials create unity in the overall presentation, which makes it

easy to differentiate and emphasize different and important information. Emphasis is most effective when used sparingly: if everything is emphasized, then nothing stands out. To focus the attention of audience, we can use elements like i. animation ii. Underline, italics and bold face, iii. Bullet points iv. Color etc.

4. Readability : Readable texts uses simple, shock sentences and explains unfamiliar words and concepts carefully. Readability is usually measured is elementary school grades.
5. Organization

   Use a logical visual pattern that is easy to comprehend. For most visual communication, that visual pattern will begin at the top, left hand side of the document or slide and work to the bottom, right handed side. It means that the important information should probably be placed at the top, usually on the left, and the least important information should be placed at the bottom, on the right.
6. Balance : To achieve a balanced design, imagine the line dividing the page either vertically or horizontally and then place visual elements so that they are either in symmetrical or asymmetrical balance.
   i. Symmetrical/Formal balance-is a mirror image balance
   ii. Asymmetrical/Informal balance-several smaller items on one side of the imaginary line are balanced by or larger item on the other side, or smaller items are placed further away from the center line than larger item.
7. Accuracy: All the texts should be spelled and punctuated correctly. Sentence should be grammatically correct, although fragments are permissible, especially in bullet points.
8. Parallelism:Items in a group must match one another. If over first bulleted starts with a verb, so must all the other.
9. Clarity : Present only one main idea. People should know at a glance what your display, poster or computer slide is all about. The content should be clear.

Presentation of Quantitative, Scientific and Exact Data

Presenting Quantitative Data

Tables, graphs, bar charts, write charts, pie charts and to some extent maps are more abstract than the pictorial charts. One must read the verbal label (legends) to understand the message. The abstraction tends to be the barrier between the message and the reader. It follows that much of the designers are prone to make the information more immediate (by adding pictorial symbols to line graphs) and to reduce the sources of confusion to the reader. Numbers are the most abstract of all, no one can make the difference between 333 and 999 without an act of cognition. There may be complex tables which may offer the readers thousands of numbers in huge array. Atleast in bar charts different quantities are represented as bars corresponding length allowing the reader to handle the data more easily with the perceptual mechanisms. At the same time, it follows that nothing presents data so exactly as a number or a formulae. Thus no graphic format will prove universally superior. Equally clearly, though some formats may be interchangeable, there are limits. Each format has its own domain of application, which may be well or poorly defined and which may overlap the domain of other formats to some extent.

1. Tables: The main benefit of tabular presentation is its compartness, a great deal of data can be put on a single page. Also, even with the two digit restriction a table presents numbers more exactly than bar or pie chart do. Tables are recommended for communicating data to the general public or farmers, tables are most useful for fellow professionals. Both constructing and reading table regime skill of high order.
2. Chart: Charts are combination of such materials, which together are most likely to represent clear visual summaries of important facts concepts and their relationships. Charts serve to highlight important points or outline materials in a presentation

Basic types of charts

There are many types of charts. Most commonly used ones are:

a. Tree/Stream chart- This chart is developed from a base compound of several roots which lead into a single trunk. The branches in turn represents developments and relationships

b. Flow chart/Organizational chart- This chart is useful when the purpose is to show the cycle of plant's growth, various stages of growth of a plant or a phenomenon etc.

c. Outline chart- The organization of content into key points and subpointswhich a communicator may do is a useful chart form.

d. Tabular/ Time chart- Sequence or relationships such as those in a historical time-line or a time-table can be shown on a tabular chart. A unique value of this chart is its ability to show time relationships.

3. Graphs: Graph may be defined as the visual representation of numerical data. Graphs reveal important relationships in data, such as trends and variations from the normal. Graphs are inherently more interesting than the numerical tabulation. There are many kinds of graphs. However, commonly used forms are:

a. Line graph:
It is the most precise or accurate of all graphs. It is particularly useful for showing trends or relationships between two sets of data.

b. Bar graph:

This is perhaps the simplest of all the graphs to read. In this each of several groups of data are repre-

sented by either vertical or horizontal bars. The length of the bars is used to represent the magnitude of the phenomenon.

c. Pie graph:

   The circle or pie graph is divided into sectors each of which is used to represent the component of a whole. The essence of pie graph is that its combined parts must always add up to 100.

d. Pictorial graph:

   Flat, simplified and representational figures are used in pictorial graphs, instead of graphs, to represent the various groups of data. Pictorial graph the added advantage of using realistic representational figures to convey meaning.

e. Area and solid figure graph:

   These graphs depend on a comparison of area to represent information and in consequence and read less easily than other forms. Solid figure graphs contain sphere, cubes or other figures that give a 3D effect.

Presenting Exact Data

Exact numerical data are usually presented in a table or a monogram. The chief purpose of these formats is to present exact data available for operational use. The choice between monogram and a table involves a complex trade off among cost, space, convenience, accuracy and speed.
Monograms or complication charts are divided into two categories:

a. Abacus: Monogram drawn on coordinate grids and abacus. They are easier to construct than alignment charts but less easy to use.

b. Alignment charts: It consists of a system of monograms in which variables are represented as a series of scales. Easier to use than abacus, they are less easy to construct.

   To present exact numbers:

   i. It is better to use graphs or tables to show the result of experiments or investigations.

   ii. To present exact data for operational purpose, use monograms(especially alignment charts) and tables (the two digit rule does not apply to these tables).

Presenting Scientific Data

Adequate collection, organization and presentation of numerical data is essential. Graphic design need to go back to source document to check the definitions or parameters, research methods to improve its performance. No one type of graph has yet been shown to be better for all communication purposes with all audiences. Accurate comprehension decreases as the number and complexity of mental operation required of the reader/ newer increases.

Type and number of messages intended to convey determine the amount of extraneous material to be included. In many cases data set can be portrayed in many different ways. Converting data into different chart types is not hard task. The hard part is determining which chart type emphasize the point we are trying to make or put the right "spin" on the data.

Programmed Instruction Technique

Introduction

In your entire earlier study you have seen it that all information has been given to you at a place and after reading all of them you enter in an exam. In this whole process it is not sure that you know about your content very well or not. So here you know about a very special fact that you can judge your progress with time. You can also get appropriate feedback during the course of study. It is programmed Instruction.

The term Programmed Instruction is probably derived from B.F.Skinner's (1954) paper "The Science of learning and art of teaching". Programmed Instruction sometimes referred to, as programmed learning is a process or techniques of teaching in a sequence of controlled steps. In most cases student work through Programmed material by themselves and at their own speed and after each step they test their4 comprehension by answering set question are fill-in missing terms. They are immediately shown their correct answers or given additional information.

In the words of smith & Moore "Programmed Instruction is the process of arranging the material to be learned into a series of sequential steps, usually it moves the student from a familiar background into a complex and new set of concept principles and understanding.

There are following characteristics of Programmed Instruction learning material.

1. PI based learning material is Individual and only one person can learn by it at a time.
2. PI based learning material is divided into various small steps.
3. PI material is arranged into in a series of sequential step.
4. Each step is related with another step.
5. The learner should have made active response.
6. Learner get immediate feedback in PI based material.
7. Students learn by "Principle of self pacing".
8. PI material is Pre-tested and valid.
9. In PI based learning Error Rate and Fault rate is very less.
10. In PI based learning stimulus, Response and Reinforcement both are active.

Fundamentals of Programmed Instruction

1. Stimulus and Response.
2. Behavior and Behavior repertoire.
3. Reinforcement
4. Transfer of Stimulus control
5. Feedback
6. Confirmation
7. Prompting
8. Generalization and Discrimination
9. Gradual Progression

10. Successive approximation.
11. Diagnosis and Remediation.
12. Retrogressive chain.
13. Programmed text.
14. Learner controlled Instruction.

Development of Programmed Instructional Material

Preparation of programmed Instruction material is a very high level specialized work. Its preparation can be divided in three stages.

1. Preparatory phase
2. Developmental phase
3. Testing and Evaluation phase.

Preparatory Phase

It is first stage of programmed Instruction. It consists following steps.

- Selection of the topic or units to be programmed
- Writing information's related to the previous knowledge of students.
- Writing objectives in Behavioral terms.
- Development of Specific outlines of Content.
- Construction of Criterion test.

Developmental phase

In this step original text or programme is written. Before writing about content, make each and every enquiry of content and keep in mind three fundamental fact of programmed Instruction.

- Designing of frames- Normally in frames there are four steps existing – Teaching frame, Practice frame, Testing frame, Using prime & prompts to Guide student's responses.
- Sequencing of frames.
- Writing initial drafts.

Testing and Evaluation phase

It is the last step of programme formation. The following activities are carried out in it.

- Individual tryout.
- Small group tryout.
- Field tryout.
- Evaluation- on the basis of data obtained three things is evaluated. 1. Error rate of programme 2. Programme density 3. Sequence progression.

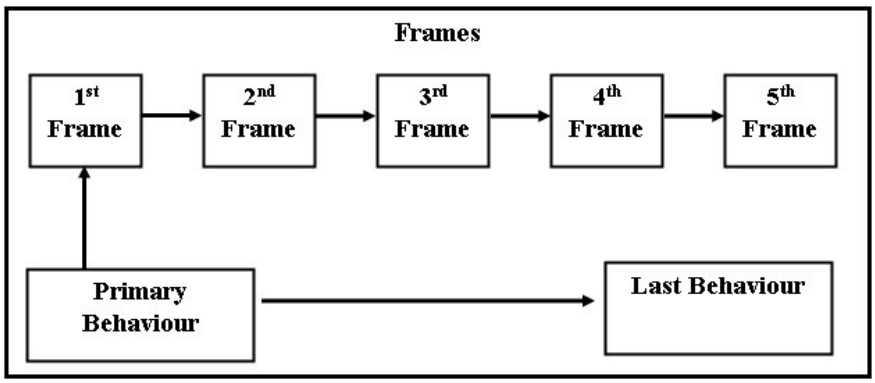
Styles/Types of programming

There are three types of programming.

1. Linear Programming.
2. Branching Programming.
3. Mathetics.

Linear Programming:

The founder of this programming is B.F. Skinner. It is based on theory of operant conditioning. It tells that "A Certain direction can be given to human behavior", for this purpose activities is needed to divide in small parts and make their analysis.



Linear programming is based on five fundamental principles-

1. Principles of small step.
2. Principle of Active responding.
3. Principle of immediate confirmation.
4. Principle of self pacing.
5. Principle of student testing.

The assumption behind the linear programming is that student learns better if content is presented in small units, student response if immediately confirmed, results in better learning, student's error create hindrance in learning. Student learns better in Laissez fairy environment.

Frame size in small steps; include only one element of topic at a time. Each step is complete in itself. It can be taught independently and can be measured independently. Frame structure is based on stimulus-response-reinforcement. There are four types of frames. Introductory frames, Teaching frame, practice frames and testing frames.

Responses in linear programming are structured responses and are controlled by programmer and not by learners. Immediate confirmation of correct responses provide reinforcement, wrong responses are ignored.

It is used for secondary level students, used for achieving lower objectives of learning especially for recall and recognition, useful for student of average and below average intelligence can be used in distance education programme.

Limitations of Linear programming-

1. No freedom for student to response.
2. Based on learning theories which were formulated by experience conducted on animals. A human being is more intelligent, than animals, he has got an intelligent brain.
3. Every learner has to follow the same path; therefore, student may cheat from one another.
4. Wrong responses are avoided in the programme. No remedy is provided for them.

Branching programming

The founder of Branching programming is Norman A Crowder. It is based on configuration theory of learning. It is a problem solving approach. It is stimulus centered approach of learning. It is based on three basic principles- 1. Principle of Exposition, 2. Principle of Diagnosis, 3. Principle of remediation.

Assumptions behind this programming are-

A. Student learns better if he is exposed to whole situation or content.
B. Student errors help in diagnosis.
C. Student learns better if remediation is provided side by side.
D. Student learns better in democratic environment.

Frame size is large. There may be a Para or page in the frame. Frame structure is Exposition- Diagnosis-Remediation types. There are two types of frames- Home page (for teaching and diagnosis) & Wrong pages (for remediation). Responses not rigidly structured and responses are selected by learner and not by the programmer. Confirmation of correct responses provides reinforcement. Wrong responses also help in diagnosis of weaknesses of the learner. Remedy is provided on the basis of diagnosed weaknesses of the learner. Error helps in diagnosis of the weaknesses of learner. More than 20% error rate can be accepted. The purpose of Branching programming is to draw out weak points of learner and provide remedy for recovering those weaknesses.

Branching programming is used for secondary as well as higher classes. Higher objectives can be achieved such as multiple discrimination etc. It is useful for students of above average and high intelligence. It can also be used in Distance education programmes.

Limitations of Branching programming

1. It does not consider learning process whether learning is taking place or not. Main emphasis is on diagnosing the weakness of learners and providing remedy to them.
2. There is no sequencing of pages. Student finds it difficult to follow the steps. He does not find it exciting or motivating, therefore he does not want to go through these pages.
3. More emphasis on remediation rather than teaching. Hence, it is only a tutorial approach.

Mathetics Programming

The founder of Mathetics is Thomas F. Gilbert. "Mathetics is defined as a systematic application of reinforcement theory to the analysis and construction of complex repertoires which represent the mastery in subject matter." It is based on connectivist theory of learning. It is a reverse chaining approach. It is based on Principle of chaining, Discrimination and Generalization. Mathetics programming is based on following assumptions.

1. Chaining of responses helps in learning to reach up to mastery level.
2. Reverse chaining of stimuli helps in learning, i.e. from whole to part, from Complex to simple.
3. Completion of task provides motivation to students.

Frames size is organized in small step but in a reverse chain i.e. from complex content to its small, simple units to attain mastery level; Frame structure is based on Demonstration-prompts-release. There are two types of frames- 1. Demonstration frames 2. Prescription frames.

Responses are structured responses and responses determined by the programmer. Completion of task provides reinforcement. Wrong responses are ignored. Error helps in discrimination but not in learning. Its main purpose is to develop mastery of the content. Main focus is on Mathematics and grammar.

It used for higher classes useful for complex and difficult task. It is useful for developing concepts of mathematics and grammar. It can be used in Distance Education.

Limitations of Mathetics programming:

1. Main emphasis is on mastery of the content rather than changes in behavior of the learner.

2. Retrogressive chaining of stimuli if not effective for terminal behavior.
3. It is very difficult to develop retrogressive learning package.

Non-directive teaching- the learner at the centre

Recognizing the different traits of each student vary from their personalities to their emotions and can be difficult, but is important for teachers.

While it may seem students may be resistant to learning, they may simply not be open to the environment. Not every student will be open with their work or be open to self-regulation of their own work either. Letting students work out their own concerns with the guidance of their teacher helps them guide their way to solutions towards their own education. Non-directive teaching is one method to achieve this goal. According to Joyce (2009) "the nondirective teaching model focuses on facilitating learning. The environment is organized to help students attain greater personal integration, effectiveness, and realistic self-appraisal," (p. 327). The nondirective teaching model allows students to express their feelings, are encouraged to define their problems, discuss their problems, plan decision making, plan for future positive actions, and act out the positive actions.

This idea will work for almost every student. It will allow them to work individually or collaboratively in pairs or teams and regulate their own concerns

Based upon work of counselors

Therapy is a mode of learning

Positive human relations

Instruction based upon human relations in contrast to subject matter

Teachers role is a facilitator

Help students explore ideas that pertain to their lives

Students and teachers work together in a partnership of learning

Builds long-term learning styles rather than short-term content objectives

Goals and Assumptions

- Teacher respects students ability to identify and find solution to problems
- Empathize with students to nurture and develop thoughts
- Both positive and negative feedback essential to development
- Focus on "we" instead of "you"

Classroom Atmosphere

– Warmth and responsiveness to student as an individual
– Teacher does not judge
– Student is free to express feelings symbolically
– Relationship is free from any type of pressure or intimidation

Growth Syndrome

- Four steps to a kind of growth syndrome
- Students will

  Release feelings

  Develop insight

Follow with action

Integration that leads to a new orientation

Taking the Lead

- Teacher directs and maintains the discussion
- Lead without taking away from students

Do's and Don'ts of Nondirective Model

Do's

Reflect, clarify, accept and demonstrate understanding

Approve when genuine progress is made

Don'ts

Interpret, evaluate, offer advice

Attempt to change the ideas or influence attitudes

Sequence of Nondirective Model

- Phase One: Define helping situation
- Phase Two: Explore the Problem
- Phase Three: Develop Insight
- Phase Four: Plan and Decision Making
- Phase Five: Integration

Applications

- Personal, social, academic problems
- Discussions about books in English
- Ag, problem solving, Careers class
- Science-Labs
- Math-Consumer math-Real Life situations

Summary

- Students centered teaching
- Teacher is facilitator
- Focus on student and not content centered
- Build long-term learners

Team Teaching

Team teaching involves a group of instructors working purposefully, regularly, and cooperatively to help a group of students of any age learn. Teachers together set goals for a course, design a syllabus, prepare individual lesson plans, teach students, and evaluate the results. They share insights, argue with one another, and perhaps even challenge students to decide which approach is better. Teams can be single-discipline, interdisciplinary, or school-within-a-school teams that meet with a common set of students over an extended period of time. New teachers may be paired with veteran teachers. Innovations are encouraged, and modifications in class size, location, and time are permitted. Different personalities, voices, values, and approaches spark interest, keep attention, and prevent boredom.

The team-teaching approach allows for more interaction between teachers and students. Faculty evaluate students on their achievement of the learning goals; students evaluate faculty members on their teaching proficiency. Emphasis is on student and faculty growth, balancing initiative and shared responsibility, specialization and broadening horizons, the clear and interesting presentation of content and student development, democratic participation and common expectations, and cognitive, affective, and behavioral outcomes. This combination of analysis, synthesis, critical thinking, and practical applications can be done on all levels of education, from kindergarten through graduate school. Working as a team, teachers model respect for differences, interdependence, and conflict-resolution skills. Team members together set the course goals and content, select common materials such as texts and films, and develop tests and final examinations for all students. They set the sequence of topics and supplemental materials. They also give their own interpretations of the materials and use their own teaching styles. The greater the agreement on common objectives and interests, the more likely that teaching will be interdependent and coordinated.

Teaching periods can be scheduled side by side or consecutively. For example, teachers of two similar classes may team up during the same or adjacent periods so that each teacher may focus on that phase of the course that he or she can best handle. Students can sometimes meet all together, sometimes in small groups supervised by individual teachers or teaching assistants, or they can work singly or together on projects in the library, laboratory, or fieldwork. Teachers can be at different sites, linked by video-conferencing, satellites, or the Internet.

Breaking out of the taken-for-granted single-subject, single-course, single-teacher pattern encourages other innovations and experiments. For example, students can be split along or across lines of sex, age, culture, or other interests, then recombined to stimulate reflection. Remedial programs and honors sections provide other attractive opportunities to make available appropriate and effective curricula for students with special needs or interests. They can address different study skills and learning techniques. Team teaching can also offset the danger of imposing ideas, values, and mindsets on minorities or less powerful ethnic groups. Teachers of different backgrounds can culturally enrich one another and students.

Advantages: Students do not all learn at the same rate. Periods of equal length are not appropriate for all learning situations. Educators are no longer dealing primarily with top-down transmission of the tried and true by the mature and experienced teacher to the young, immature, and inexperienced pupil in the single-subject classroom. Schools are moving toward the inclusion of another whole dimension of learning: the lateral transmission to every sentient member of society of what has just been discovered, invented, created, manufactured, or marketed. For this, team members with different areas of expertise are invaluable.

Of course, team teaching is not the only answer to all problems plaguing teachers, students, and administrators. It requires planning, skilled management, willingness to risk change and even failure, humility, open-mindedness, imagination, and creativity. But the results are worth it.

Teamwork improves the quality of teaching as various experts approach the same topic from different angles: theory and practice, past and present, different genders or ethnic backgrounds. Teacher strengths are combined and weaknesses are remedied. Poor teachers can be observed, critiqued, and improved by the other team members in a nonthreatening, supportive context. The evaluation done by a team of teachers will be more insightful and balanced than the introspection and self-evaluation of an individual teacher.

Working in teams spreads responsibility, encourages creativity, deepens friendships, and builds community among teachers. Teachers complement one another. They share insights, propose new approaches, and challenge assumptions. They learn new perspectives and insights, techniques and values from watching one another. Students enter into conversations between them as they debate, disagree with premises or conclusions, raise new questions, and point out consequences. Contrasting viewpoints encourage more active class participation and

independent thinking from students, especially if there is team balance for gender, race, culture, and age. Team teaching is particularly effective with older and underprepared students when it moves beyond communicating facts to tap into their life experience.

The team cuts teaching burdens and boosts morale. The presence of another teacher reduces student-teacher personality problems. In an emergency one team member can attend to the problem while the class goes on. Sharing in decision-making bolsters self-confidence. As teachers see the quality of teaching and learning improve, their self-esteem and happiness grow. This aids in recruiting and keeping faculty.

Disadvantages: Team teaching is not always successful. Some teachers are rigid personality types or may be wedded to a single method. Some simply dislike the other teachers on the team. Some do not want to risk humiliation and discouragement at possible failures. Some fear they will be expected to do more work for the same salary. Others are unwilling to share the spotlight or their pet ideas or to lose total control.

Team teaching makes more demands on time and energy. Members must arrange mutually agreeable times for planning and evaluation. Discussions can be draining and group decisions take longer. Rethinking the courses to accommodate the team-teaching method is often inconvenient.

Opposition may also come from students, parents, and administrators who may resist change of any sort. Some students flourish in a highly structured environment that favors repetition. Some are confused by conflicting opinions. Too much variety may hinder habit formation.

Salaries may have to reflect the additional responsibilities undertaken by team members. Team leaders may need some form of bonus. Such costs could be met by enlarging some class sizes. Nonprofessional staff members could take over some responsibilities.

All things being considered, team teaching so enhances the quality of learning that it is sure to spread widely in the future.

Social media mediated communication

Social media refers to the internet-based tools for sharing and discussing information among people. It refers to the user generated information, opinion, video, audio, and multimedia that is shared and discussed over digital networks (Andres and Woodard 2013). Social media are web based tools of electronic communication that allow users to personally interact with others individually or in groups for the purposes of exchanging information, sharing thoughts and opinions, influencing and facilitating decision-making by creating, storing, retrieving and exchanging information in any form (text, pictures, video, etc.,) by anyone in the virtual world.

Why use Social media in Agriculture ?

The special features of participation, openness, conversation, community and connectedness makes social media a unique user experience.

- Very less number of extension workers as compared to number of farmers.
- Need to deliver different alternatives to cater the needs of large number of farmers. Social media is an appropriate tool for diffusing the information, getting their feedback and answering their queries within short time.
- Facebook has 195.16 million active users in India, YouTube gets more than 50 million unique users each month, Twitter has 23.2 million users, WhatsApp has 70 million users in India and the highest monthly active users in the world (www. statista.com, 2016).
- All these statistics prove the huge potential that social media can be for extension practitioners to reach

out to the people. India is a huge market for social media that is constantly expanding into the rural areas and that improves the scope of reaching not only the farmers but the farm families and youth altogether for higher impact.

- Social media can be advantageously used in agricultural extension, as discussed below (Saravanan et al., 2015)

Advantage of social media in agricultural extension

- Save money, time and effort
- Information rich and interactive
- Per unit cost is less as compared to traditional form of extension
- Experts can be contacted directly
- Suitable for creating awareness among the users
- Supplying extension information to a nation wide
- Publications in agriculture extension can be shared
- Attracting youth towards agriculture
- Widen the scope of extension
- Help in market-led extension
- Assist to get feedback

How to integrate social media in extension

- Internet based services are increasingly restructuring the daily life of people, instead of dividing them into on-line and offline experience. Rural people are using social media for connecting with friends and family, reading current news, to get information from peers. Connecting that to agriculture and leveraging it to bridge the farmer-extension gap can prove to be a boon to the agriculture sector and the farm families. A few pointers in engaging with farming community through social media are given below:
- A thorough planning is needed before engaging online through social media, specifically about objectives, target audience, channels and approaches.
- Posting information at times when target audience are most probably active online.
- Interacting in real time to keep the interest of the involved clients alive.
- Sharing only relevant posts or information.
- Focusing on specific platforms based on clients' preferences and engage them continuously rather than engaging in a number of platforms but failing to engage properly.
- Keeping holistic view in mind while sharing information rather than focusing on single enterprise as most smallholders have multiple enterprises on their farm.
- Tagging individual clients to whom the information might be specifically useful and share for all so that the intended audience receives it personally while others can also be benefited.
- Encouraging peer to peer communication as much as possible, so that information related to local.

Dimensions of social media

Richness:-The ability to convey verbal and nonverbal cues, and facilitate shared meaning in a timely manner.

Interactivity:- The extent to which, rapid feedback is allowed.

Social presence:- The degree to which, virtual team members feel close to one another.

Principles of social media

The primary focus in social media is participation and very essence of social media is that the users generate the information.

Participation: One can't capture the "wisdom of the crowd" if the crowds don't participate. Successful social-media solutions tap the power of mass collaboration through user participation. The way to achieve substantial benefit from social media is by mobilizing

the community contribution.

Collective : Here, as a core principle of social media the use of the term "collective" is tightly aligned with its root origin to collect. With social media participants collect around a unifying entity. To quote a few, people collect around the face book social graph to contribute their profile information. People collect on Wikipedia add encyclopedia articles. People collect on YouTube to share videos. In these, examples as in all social media, people collect around the content to contribute rather than individually create the content and distribute it.

Transparency: With social media, it is not enough to collect participant contributions. The social media also provide transparency in that participants are privy to each other's participation. They get to see, use, reuse, augment, validate critique and rate each other's contribution. Without transparency, there is no participant collaboration on content. It is in this transparency that the community improves content, unifies information, self-governs, corrects, evolves, create emergence and otherwise propels its own advancement.

Independence: The principle of independence means that any participant can contribute completely independent of any other participant. This is also called anytime, anyplace collaboration. Participant can collaborate no matter where they are or whoever else may be posting content at that time. Generally, there is no workflow or document check-in/ check-out that can bottleneck collaboration and impact the scalability required for mass collaboration. No coordination between collaborators is required.

Persistent: With social media, the fruit of participant contributions are captured in a persistent state for others to view, share and augment. This is one of the most obvious principles. It differentiates social media from synchronous conversational interaction, where much of the information exchanged is either lost or captured, most often only in part, as an additional scribing activity.

Emergence: The emergence principle embodies the recognition that one can't predict, model, design and all human collaborative interactions and optimize them as would a fixed business process. it is the recognition that one benefit of social media is as an environment for social structure to emerge. These structures may be latent or hidden organizational structures, expertise, work processes, content organization, information taxonomies and more.

Social media tools

Facebook: According to survey Facebook is one of the most popular social networking website in the world as it makes it easy, to connect with family and friends and share pictures, websites and videos. It allows users to create a profile, add friends, send messages and join common interest groups. In the same manner farmers can create a group and discuss the issues. Facebook used by institutes like; Kerala Agricultural University, Kerala , Krishi Vigyan Kendra, Faridkot , Krishi Vigyan Kendra, Jalandhar, Turmeric Farmers Association of India, Innovative farmers of Hoshiarpur , New era foods, Tadka

YouTube: YouTube is a video-sharing website where users can upload and view videos. With over 3 billion YouTube videos watched every single day and 48 hours of footage uploaded every single minute to the world's

most popular video sharing website we wanted to produce a useful guide for getting the most out of the service. Subject related videos can be uploaded to you tube. It can also be used for delivering information through video. As we all know the saying, "seeing is believing", you tube can be used to built the confidence of the farmers in adopting new technologies and innovations. Extension personnel of a particular geographical area can get access to information and watch videos on many important agricultural topics prevalent in other areas. Some Examples by institutes includes; Bihar Agricultural University, Sabour, Indian council of agricultural research, TNAU Agritech portal, AAU Anand, Krishi Vigyan Kendra, Faridkot, by Extension personnel in Punjaab , progressive farmer group and others like Digital green, Kissan Kerala and Krishi Darshan

WhatsApp: WhatsApp Messenger is a proprietary, cross-platform instant messaging application for smartphones. In addition to text messaging, users can send each other images, video, and audio media messages. It can provide zero cost communication facility. There are various groups created by agriculture professionals for sharing instant information related to agriculture. Some Examples includes KVK jalandhar at your door, Farm innovator group of IARI, New Delhi

Twitter: Another popular and precipitously increasing source of social media is Twitter. Twitter is quick and easy, allowing users to share 280 character messages. These messages are called "Tweets," that are available to anyone who is interested in reading them. Professional and scientist can use the twitter for sharing important and timely information to other scientist, extension personnel and agricultural communities. Institutes like CIMMYT, ICAR, Agriculture India(Government of India), Agricultural scientists of M S Swaminathan foundation are using the media.

Blog :A blog is a discussion or informational site published on the World Wide Web and consisting of discrete entries typically displayed in reverse chronological order. This is useful for the agriculture professionals to update their knowledge for a specific field.

Cost – Benefit Analysis of Media Use

Cost benefit analysis, also referred to as "benefit cost analysis," is a method of evaluation that estimates the value of projects to determine whether those projects are worth undertaking or continuing. At its most basic, cost benefit analysis, CBA, could be a calculation that continuing production of a product or product option is no longer viable. A cost−benefit analysis is an economic technique that attempts to quantify the advantages (benefits) and disadvantages (costs) associated with a particular project or policy**.** CBA assesses the profitability of a financial endeavor by considering the present value of each cost and benefit.

Example: Assessing intranet cost-benefits. Why is cost-benefit analysis necessary?

"There are so many intangibles, it's impossible to do."

"The benefits of an intranet are so obvious, there's no point."

"An intranet is so cheap to set up that there's no requirement to justify it."

"An intranet is just a basic tool, like fax and word processing, that can be taken for granted."

"The figures are far too complex to calculate."

Method of calculating Cost benefit analysis: Determine what you want your intranet to be able to do in its initial implementation. Analyse what it will cost you to make this happen – both up-front and in ongoing maintenance. Anticipate the cost savings and the productivity benefits that will arise.Calculate the return you will get on your investment and how long this will take to materialise.

Scoping of Intranet: It is not possible to conduct a meaningful analysis without a clear indication of what intranet to achieve. There are many ways of categorising what an intranet does.

Information publishing: Using the intranet to deliver news and other information in the form of directories and web documents.

E-mail: An e-mail system that integrates seamlessly with the intranet, allowing information to be both 'pushed' and 'pulled'.

Document management: Using the intranet to allow users to view, print and work collaboratively on office documents (word-processed documents, spreadsheets, presentations, etc.).

Training: Using the intranet to deliver training at the desktop.

Workflow: Using the intranet to automate administrative processes.

Databases and other bespoke systems: Using the intranet as a front-end to organisation-specific systems, such as corporate databases.

Discussion: Using the intranet as a means for users to discuss and debate issues.

Establishing basic facts and figures: The size of your intranet target population and, if appropriate, the proportion this represents organisation's total projected intranet user population. The number of people within the target population who will need new PCs, the number who are currently not networked and the number who will be provided with access to the Internet.The average annual salary and benefits of the target population, the average working hours in a day and working days in a year (used to calculate labour savings and productivity gains).

Analysing costs: The next step is to analyse the costs that will be incurred in setting up and running the intranet. There are two main categories of cost:

1. Capital costs: Hardware and software costs that will be met by the organisation's capital budget and, normally, written off over a number of years.

2. Revenue costs: Other costs that are likely to be borne by the organisation's normal expense budget. It is also necessary to make a distinction between the one-off costs associated with start-up and ongoing maintenance costs.

3. Start-up capital costs: These costs form a major part of up-front investment. Because, as fixed assets, they have a useful life of several years and a resale value, they are normally written off over three or four years. New PCs – for providing intranet access to employees without their own PCs. Providing network connections to PCs not currently networked.Web servers and server software. Provide for the cost of software applications, whether they are developed on a bespoke basis (in-house or outside) or purchased off-the-shelf.

The need will depend on usage of intranet for:

Information publishing: examples of automated applications include directories (phone, employees, products, services, locations, etc.) and applications that automate the production of news pages, classified ads or newsletters.

E-mail: intranet e-mail is typically provided with a single off-the-shelf application, plus individual client licenses.

Document management: typically one main application.

Training: for ease of calculation, assume that an intranet training application represents one hour of self-instructional material.

Workflow: applications include on-line forms (holiday, sickness, expenses, timesheets, purchasing, surveys, bookings for rooms, training or travel). If these simply submit messages to be processed manually, they will be relatively inexpensive to develop. If complete administrative processes are to be automated, which use the intranet as a front-end, a more substantial investment will be required, whether in bespoke software development or purchase of/upgrade to intranet-enabled versions of off-the-shelf systems such as HR databases, media libraries, sales support systems, etc.

Databases and other bespoke systems: include any application that provides users with an intranet front-end to a major, existing, bespoke corporate system.

Discussion: there will typically be one application to allow users to debate topics over the intranet.

4. Start-up revenue costs

These also form part of up-front investment, but are more likely to be written off in the first year of implementation:

Design consultancy: The cost, whether internal or external, of creating a structural, navigational and graphical design for the part of the intranet being analysed.

Promotion: The cost, again internal or external, of launching the intranet to your target population.

Training: The total cost, per user, of providing training in both how to use the intranet and how to provide content.

5. Ongoing capital costs

Some money will have to be reserved each year, from year 2, for upgrades to your server hardware and software and to your off-the-shelf applications. Perhaps the best way of estimating this will be as a percentage of the initial cost – say 25%.

6. Ongoing revenue costs

A considerable amount of effort is required to maintain and continuously improve your intranet. These costs need to be budgeted from year one:

Editorial and design personnel: The people required to administer intranet policies and act as overall content editors for your target population. Remember to include salaries, benefits and expenses.

Technical personnel: The people required by the organisation as a whole to keep your intranet up and running from a technical perspective.

Internet access: The cost of providing lines out to the Internet. A simple way of estimating this is to make a small annual allowance, say £50, for each employee who will have access.

The following costs apply after the first year of implementation:

1. **Ongoing consultancy:** continuous modifications and improvements to your intranet design, expressed as a percentage of start-up design consultancy costs.
2. **Ongoing promotion:** continuing promotion of the intranet to your target population, expressed as a percentage of start-up promotional costs.
3. **Ongoing training:** a percentage of start-up training costs, largely to account for employee turnover.
4. **Maintenance of bespoke applications:** assuming this work is not carried out by the technical personnel listed above, make an allowance for continuing development of your bespoke applications, say 25% of the initial cost.

Forecasting benefits

There are three main categories of benefit:

1. Direct cost savings:

Savings in expenditure other than labour - print, paper, telephone, travel costs, etc. - that can be directly attributed to the introduction of the intranet.

These can usually be calculated in three steps: (1) the number of incidences of expenditure in the time period, (2) the cost of each incidence and (3) the proportion of these that could be eliminated using the intranet. For example, if the number of pages of formal printed material received per person per year was 500, the cost in pence per page, including printing and delivery, was 6p and the percentage of these pages that could be delivered on-line was 70%, the saving in pounds would be 500 x (6 / 100) x 70% x the size of the population.

2. Labour savings:

Savings in the amount of time required to carry out tasks as a result of introducing the intranet.

These can be expressed in minutes per person per day.

To calculate the saving, divide the number of minutes saved by the number of minutes in the day (60 x the number of working hours) and multiply by the size of the population and the average salary.

3. Productivity increases:

Increases in output per person attributable to the introduction of the intranet, expressed as a percentage.

Because personal productivity has such a wide range of implications from job to job and organisation to organisation, it is probably easier to convert these to simple labour savings.

For example, if the total productivity gains were 3%, calculate the savings as (3 / 100) x the size of the population x the average salary. The actual effect of higher productivity, such as increases in sales, could well be much larger and, if you can estimate these, then you should.

Each category of intranet usage has its own associated benefits:

Information publishing

Direct cost savings: the print, paper and delivery costs that can be saved by making documents available on-line and discontinuing their paper equivalents. Clearly this saving can not be realised if paper and on-line versions operate in parallel. Labour savings: faster access to information; more rapid and easy exchange of information; less duplication of effort (because there need be only one owner for each piece of information) and less interruptions (because you can control when you access information).

Productivity increases: through the availability of more accurate and up-to-date information and making available information that was not previously available.

Intranete-mail

Direct cost savings: Costs of phone calls, faxes, memos, letters, diskettes and other digital media, saved through the use of e-mail both within and outside the organisation.

Labour savings: less time trying to get through on the ‘phone; less time spent preparing and checking items to be sent out and less interruptions (because you can control when you access information).

Productivity increases: faster access to information.

Document management

Direct cost savings: the print, paper, digital media and delivery costs that can be saved by making documents available on-line for review, editing and approval rather than distributing as hard copy or on diskette.

Labour savings: less time spent sending out documents for review, editing and revision; less time spent locating/obtaining documents for review, editing and revision; less duplication of effort (data can be shared between documents by linking or copying and pasting); less time wasted correcting errors caused by work being undertaken on incorrect versions.

Productivity increases: faster access to accurate and up-to-date business documents.

Training

Direct cost savings: savings in travel and accommodation, trainers, rooms and equipment for courses delivered via the intranet rather than in a classroom.

Labour savings: less time spent travelling to courses; less time required to reach learning objectives (through the use of more efficient self-instructional methods).

Productivity increases: immediate access to required knowledge and skills.

Workflow

Direct cost savings: the print, paper and delivery costs that can be saved by making forms available on-line.

Labour savings: less time spent per person per form in obtaining up-to-date copies of the form to complete; for each fully-integrated workflow application, the number of days saved in admin time per year.

Productivity increases: faster and more reliable admin processes.

Databases/bespoke systems

Labour savings: less time required to learn and use applications.

Productivity increases: through information being available that was not previously available.

Discussion

Direct cost savings: travel and accommodation costs for meetings that could instead be conducted on-line.

Labour savings: less time spent travelling to meetings; less time spent in meetings.

Productivity increases: faster resolution of issues and concerns; the resolution of issues and concerns that would not have been possible without the intranet.

Analysing the results

Summarising costs: If target population is a subset of your organisation's total intranet population, then you need only need to take a proportion of the costs that are borne centrally. The following costs are likely to be central:server hardware and software the purchase, development, maintenance and upgrades to software applications provision of technical personnel

Summarising benefits

Total up the benefits for each intranet category under the three benefit headings: direct cost savings, labour savings and productivity increases. Before making calculations, it is necessary to determine the proportion of the target population that is affected by each of the intranet categories.

For example, the whole population may be affected by the use of the intranet for information publishing, but only 30% for document management and 40% for workflow.

Comparing costs and benefits

Benefits	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Information publishing	91346	182693	182693	182693	182693
E-mail	0	0	0	0	0
Document management	0	0	0	0	0
Training	22336	44671	44671	44671	44671
Workflow	22170	44340	44340	44340	44340
Databases/bespoke systems	0	0	0	0	0
Discussion	165459	330917	330917	330917	330917
	301311	**602622**	**602622**	**602622**	**602622**
Depreciation of capital costs					
New PCs	6667	6667	6667	0	0
Networking	5000	5000	5000	0	0
Server h'ware & s'ware	16667	20833	25000	12500	12500
Applications	152222	158333	164444	18333	18333
	180556	**190833**	**201111**	**30833**	**30833**

Revenue costs					
Editorial/design personnel	30000	30000	30000	30000	30000
Technical personnel	200000	200000	200000	200000	200000
Internet access	2500	2500	2500	2500	2500
Maintenance of bespoke apps	0	95833	95833	95833	95833
Design consultancy	20000	5000	5000	5000	5000
Promotion	10000	2500	2500	2500	2500
Training	15000	3000	3000	3000	3000
	277500	**338833**	**338833**	**338833**	**338833**
Total costs	**458056**	**529667**	**539944**	**369667**	**369667**
Profit or loss	**-156745**	**72955**	**62677**	**232955**	**232955**
Accumulated profit or loss	-156745	-83790	-21113	211842	444797

This example assumes that information publishing, training, workflow and discussion are implemented, that the write-off period is three years and that year one benefits are 50% of those in subsequent years.

Cost benefit analysis methods

1. Payback:

This is literally the amount of time required for the cash inflows from a capital investment project to equal the cash outflows.

Payback period = Initial payment / Annual cash inflow

2. Return on investment

Return on investment is a way of expressing as a percentage the return you have made relative to the amount you have invested:

$$\text{ROI} = \frac{\text{benefits – investment}}{\text{investment}} \times 100$$

3. Average Rate of Return:

The average rate of return expresses the profits arising from a project as a percentage of the initial capital cost. However the definition of profits and capital cost vary. For instance, the profits may be taken to include depreciation, or they may not. One of the most common approaches is as follows:

ARR = (Average annual revenue / Initial capital costs) * 100

4. Net Present Value:

The Net Present Value (NPV) is a Discounted Cash Flow (DCF) technique. It relies on the concept of opportunity cost to place a value on cash inflows arising from capital investment.

Opportunity cost is the calculation of what is sacrificed or foregone as a result of a particular decision. It is also referred to as the 'real' cost of taking some action.

Present value is the cash equivalent now of a sum receivable at a later date. If we didn't spend that money and banked it instead, the opportunity cost includes both the initial sum and the interest earned. NPV is a

technique where cash inflows expected in future years are discounted back to their present value. This is calculated by using a discount rate equivalent to the interest that would have been received on the sums, had the inflows been saved. A positive NPV means that the project is worthwhile because the cost of tying up capital is compensated for by the cash inflows that result.

5. Internal Rate of Return (IRR):

"What level of interest will this project be able to withstand?" The IRR is the annual percentage return achieved by a project, at which the sum of the discounted cash inflows over the life of the project is equal to the sum of the capital invested.

6. Modified Internal Rate of Return (MIRR):

This is usually used to rank various choices. As the name implies, MIRR is a modification of the Internal Rate of Return (IRR).

MIRR adds up the negative cash flows after discounting them to time zero, adds up the positive cash flows after factoring in the proceeds of reinvestment at the final time period, then works out what rate of return would equate the discounted negative cash flows at time zero to the future value of the positive cash flows at the final time period.

The Web based cost-benefit calculator:

A web-based tool was developed to calculate cost benefit analysis.

EPIC group Intranet cost benefit calculator was developed. An Excel version is also available free of charge, which can be experimented with and customised more easily.

Introduction to Agricultural Journalism

Journalism is a fascinating field that takes its practitioners to the places where things are happening and to the people who are making history. Diversified, in the sense that it covers virtually all mankind's activities, and challenging to the intellect. "Journalism" encompasses fields ranging from reporting with words and photographs to editing, and from newspapers to television. Journalists are the eyes, ears and curiosity of the public and must be so broad in their outlook that they can translate events in many fields. The average person today interprets "journalism" to include not only newspapers and magazines, but also radio, television, video, cassette publications, advertising, book publishing and education directed to those

fields. The much broader fields of journalism came with the concurrent arrival of (1) a communications explosion detonated by the advent of commercial radio and (2) an educational boom that is spreading literacy and making people demand more information regarding their world. Radio is the start of new media for presenting news, spurred the modem technology that is still developing more ways to communicate broader horizons of knowledge to the consumer, who today may be a reader, listener, or viewer. Education, associated with the technical advances in ways to communicate, once was regarded as the privilege of the few but now is accepted as a basic right and the key to elevating the economically depressed. Economic and educational progress produces an increase in the audiences for newspapers, books, magazines, television, and other purveyors of news and knowledge. The history of news gathering dates back to ancient Egypt, when slaves raced to the pharaohs with oral reports. In early modern history, town criers sang important news in the village streets. The printed newspaper started in seventeenth-century in Great Britain, where newsletters advised businessmen of ship arrivals. The ways for communicating news have been improved through the years by developments pertaining to the "print" or newspaper and magazine fields, and to the electronic or radio-television media and the new interactive media via internet.

The media now available to us are basically of two kinds: those, which use modern means of communication and those, which are known as traditional media. In more specific terms, the different media are: (i) Print - printed word, pictures, etc. which appeal to the sense of sight (newspapers, periodicals, publications, advertisements, etc.); (ii) Radio - sense of sound; (iii) Audio-Visual - appeal to both visual and auditory senses: TV, films; (iv) Traditional media - puppetry, folk dance, folklore, community singing, rural theatre, etc.; (v) Oral communication -public meetings, group discussions, individual contacts, etc.; (vi) Outdoor media - printed word and visual: posters, cinema slides, hoardings, neon signs, etc. (vii) ICT - all technical terms that are used for handling information and facilitating communication, including computers, network hardware, communication lines and all the necessary software.

The Journalism

Journalism is information. It is the events of the day distilled into a few words, sounds or pictures, processed by the mechanics of communication to satisfy the human curiosity of a world that is always eager to know what's new. Journalism is basically news. But journalism may also be entertainment and reassurance, to satisfy the human frailty of a world that is always eager to be comforted with the knowledge that out there are millions of human beings just like us. Journalism is private eye and every 'underground' news sheet. It is the like-jockey on Radio One Chattering about the latest group to emerge in the pop-rock culture. Journalism is the television picture beamed by satellite direct from some war zone, showing men dying in agony and accurate colour. It is the television picture of a man dying stepping on to the surface of moon, seen in million of homes as it happens. Journalism can communicate with as few people as can classroom news met or a parish magazine, or with

as many people as there are in the world. It is the practice of investigating and reporting events, issues and trends to the mass audiences of print, broadcast and online media such as newspapers, magazines and books, radio and television stations and networks, and blogs and social and mobile media. The term was originally applied to the reportage of current events in printed form, specifically newspapers, but in the late 20th century it came to include electronic media as well. It is sometimes used to refer to writing characterized by a direct presentation of facts or description of events without an attempt at interpretation.

Journalism means writing for newspapers or magazines. It is the communication of information through writing in periodicals and newspapers. The peoples have an inborn desire to know what's novel or new. This curiosity is satisfied by the journalists through their writings in the newspapers and journals regarding the currents events and news. The word journal comes from Latin word "diurna" which means daily. In ancient Rome, short bulletins of battles, fire and election compile by government official were posted up in public places. These were called acta diurna which means "daily events". Fraser F Band 91972) describes it as "something that embraces all forms in which or through which the news and comments on the news reach the public." According to him, all that happens in the world, if such happening hold interest for public, and all the thoughts, actions and ideas which these happenings stimulate, become basic material for the journalist. According to Webster' s third International Dictionary Journalism means "the collection and editing of material of currents interest for presentation, publication or broadcast." According to Chamber's twentieth Century Dictionary, journalism means "the profession of conducting or writing for public journals". The word 'journalism' is derived from journal which means a daily register or a diary – a book containing each day's business or transactions. The word "journal" also connotes newspapers published every day or even less often or a magazine. Thus, journalism means the communication of information regarding the events of the day through written words, sounds or pictures. Journalist is a person who writes for or conducts a newspaper or a magazine.

Journalism is basically the communication of news but it may also contain features for the entertainment of the readers. A journal may also consist of single news-sheet meant for a factory or a small village, or it may be an international magazine or newspaper for the whole world. Journalism is a report of things as they appear at the moment of writing. It is not a definitive study of situation. In journalism there is an element of timeliness which is not present in the more leisurely types writing say, for example the writing of a book.

The journalist

A journalist mainly performs two functions, firstly, reporting the news and secondly, offering interpretation and opinion based on the news. A journalist may also write an account that is both entertaining as well as newsworthy. But a person, who writes for simply entertainment only, such as television script writer, is not a journalist. The oldest journalist is connected with the periodical journalism is connected with the periodical journalism. A periodical can be called a news paper if it appears at least weekly in a recognized news paper format and it has the general public interest.

The term "journalist' includes the reporters, writers, and columnist who work for newspapers, news agencies, news magazines and other magazines devoted largely to public affairs. The print media which these journalist serve is known collectively as 'the press'; although many newspapermen would like reserve this term only for their medium. The news reporting and commentaries delivered by television and radio are equally a form of journalism. Similarly, public affairs documentaries, direct broadcast of new events and film documentaries also come under journalism. The reporters, writers, editors and photographers working in the television radio film areas claim that the general descriptive term " the Press' also applies to them as well as the print media men when they are dealing with news and opinions. Of course, they tend more often to identify themselves with the name of their medium than with the collective word " journalist" so do others in the list of communicators given above like photographers, book editors, advertising men, industrial editors and so on.

The journalistic writing is a contemporary report of the changing scene in the society. It is mainly intended to inform the readers regarding what is happening around them. There is a big impact of journalism and it can and often does influence the course of events which are being reported, because, it sometimes brings public opinion into focus and at other times even creates it. Thus, the reports regarding communal riots, workers' demonstrations, rising prices or deteriorating crime situation can start a reaction among the citizens and force a change in the local, state or national prices.

Television and radio journalist communicates the news of the contemporary events by means of electronic devices instead of using paper and ink. In spite of the fact that this makes the transitory nature of airway journalism even more pronounced than that of written word, still it is not in any way less effective, and may often be more so. Some particular type of events with and may often be more so. Some particular type of events with strong elements of sound or sight such as an earthquake, disaster, the fury of a flood, a cricket match, any other natural calamity or a political demonstration or meeting, are especially well communicated by television and radio.

The increase in the scope of press in our present day life has also increase its responsibilities manifold. At present journalism has become a highly organized activity. It is a very dynamic profession which moves with the times. Very often it becomes the initiating factor for many new developments and achievements. The work of a journalist has become much varies. To perform his functions he must possess a great capacity for infinite work, a gift of imagination which sees stories in ones and news and views to the public in clear and concise language.

The press is called the "Fourth Estate". It enjoys a very important place in the society and plays a very significant role in a democracy. The press protects the ordinary persons against the injustice and tyranny of the ruler. It is the upholder of the rights and freedoms of the citizens. The press is the voice of the people and a watch –dog of their interest. Really it embodies the freedom of speech and expression of the citizens has also been granted the right to freedom which guarantees seven freedoms including the speech and expression.

Thus, a news journalist might be involved with:

- Researching stories.
- Writing hard news and feature stories.
- Shooting photographs and video
- Editing stories.
- Checking facts.
- Planning issues
- Laying out pages.

Functions of Journalism

- Inform the public through the news coverage
- Influence and mold the public opinion
- Amuse or entertain the public
- Serve and promote community welfare as a whole

Definitions of Journalism:

- "Journalism is being and doing, not theorizing." -Anonymous
- "Journalism includes the writing and editing of newspapers and periodicals. Although this is the basic definition of various talks and processes intimately connected with production of serial publication are

commonly classified as journalistic. Thus, the gathering and transmission of news, business management of journal and advertising in all its phases are often thought of as coming within the field of journalism and following the advent of radio and television, there was a trends toward including all communication dealing with current affairs in the terms." – Encyclopedia Britannica

- "Journalism: The occupation of conducting a news medium, including publishing, editing, writing or broadcasting.- New Webster's Dictionary
- Journalism: The Profession of conducting of writing for public journals. – Chambers Dictionary
- "Journalism is communication. It is the events of the day distilled into a few words, sounds or pictures, processed by the mechanics of communication to satisfy the human curiosity of a world that is always wager to know what's new. - David Wainwright
- Journalism is the business of timely knowledge- the business of obtaining the necessary facts, of evaluating them carefully and of presenting them fully and of acting on them wisely."- M. K. Gandhi
- "The press is one of the vital organs of modern life especially in a democracy. The press has tremendous powers and responsibilities. The press must be respected. – Jawahar Lal Nehru
- "Journalism is a systematic processes of gathering, writing, interpreting, processing, disseminating public opinion, public entertainment for publication in news reports, magazines and broadcast. –Wolser
- Literature in a hurry –Jose A. Quirino

Scope of Journalism

Journalism may be divided into three areas; namely written, oral and visual. Periodicals such as newspapers and magazine fall under written journalism. A periodical, defined broadly, is a publication that comes out at regular periods of interval- daily, weekly, fortnightly, monthly, bimonthly, quarterly, annually etc.

A newspaper, compare to magazine, prints more news has no special cover, and is printed in news print. News is printed on the first page as well as on the inside and back pages.

A magazine, on the other hand prints more features and human interest stories, has a special cover and is oftentimes printed on book paper. If ever news is printed, it is brief, featurized and found in the inside pages.

Periodical, brochures, journals books, and graphic arts are classified under print media. Radio falls under oral journalism, while television, movies, documentaries fall under visual journalism.

Radio and television are examples of broadcast media while movies are documentaries are example of film media.

History of Journalism:

The history of journalism is closely related to the developments of printing press. The credit for the inventions of the art of printing goes to the Chinese. Chinese were the first to use moveable types for the printing press. Even paper was first of all manufactured in China. The first book was also printed by the Chinese people in 868 AD. The Chinese Court Gazette is said to be the oldest newspaper published at Peiking.

The knowledge of art printing spread to the west from China. The Chinese had developed the moveable types between the 9th & 11th Century. But it was until the 14th Century that the moving type was introduced in Europe.

In the 15th century, Johann Gutenberg, the goldsmith of Mainz, a city in Germany, developed the moveable type. He also invented a suitable link for the metal type which replaced wooden blocks. In 1456, Gutenberg printed nearly 300 copies of the Bible. Gradually the printing presses were established in many other countries of the world. Venice, in Italy became a flourishing centre of printing press. In 1476, Caxton England's first

printer set up a press in Westminster. He had learnt the art of printing in Cologne. He also printed the books in English language whereas before him these used to be printed only in Latin. Soon, presses begin to be set up in all the flourishing trading centres of the world.

Even in the ancient and early medieval times bulletins, news pamphlets and other propaganda materials used to be pasted on the walls. Sometimes, the royal proclamations or edicts were also pasted on the walls or inscribed on the stones. The Kings in ancient times used to get written reports from their departments and their agents. There were writers of news-letters who sent news to the persons who were residing far away from the capital of a country. News-letter thus is quite an early institution. In India, news writing had become a much prevalent institution during the Mughal regime.

In the middle of the 16th Century, the morning newspaper took shape in Europe. First of all, the trading houses published news-books and then news-letters. Generally, political and economic news for general interest was contained in these news-books. In 1560, in some towns of Germany and Switzerland serial numbered news-sheets started appearing. In 1609, two news-sheets, namely *Avista* from Germany and *Relations* from stratsbourg started coming out regularly. By 1618, weekly newspapers started coming out in English, Dutch and German languages from Amsterdam in Holland.

By 1621, the English printers started their own news-sheets. In 1621, a single news-sheet called a *coranto* was published in English. By 1660, weekly publication of news –sheets had been well established in U.K. in 1665, *Oxford Gazette,* which later on became *London Gazette* made its appearance. This was a regular newspaper which was published twice weekly. But the first daily newspaper, *The Daily Courant* made appearance in England only in 1702. It was in every sense a newspaper which was printed regularly. The first newspaper to appear in USA was "Public Occurrences both Foreign and Domestic". It was published in 1690 by a British Journalist, Benjamin Harris, who had fled from English and gone to America. But the first newspaper started by an American, Job Campbelll, was the *Bostob Newsletter* published in 1704. In 1783, the fist daily newspaper of America appeared in Pennsylvania. The first Russian Journal is believed to have been printed in 1703.

The Printing press was introduced in India in 1556 AD. Ad Newspaper in India is also the by-product of the British rule. The first attempt to start a newspaper in Calcutta was made by William Bolts. But in reality, J.A. Hichey, an Englishman started the first English Newspaper *Bengal Gazetter or Calcutta General Advertiser at Calcutta* in 1780. His newspaper consisted of two sheets only. It was specialized in the exposure of the stories regarding the private lives of the servants of the East India Company including its high-ups. Messink and Reed started the next newspaper named as India Gazette. They benefitted much from the experiences of Hichey. In 1784, another paper named *Calcutta Gazette* was started. After this in 1785, Richard Johnson started the *Madras Courier* which was published from Madras. The first newspaper to be published from Bombay was *Bombay Herald* which was started in 1789. Generally, the first newspapers in India were started by those Englishmen who had certain personal grievances against the East India Company. Usually, the circulation of these newspapers was very small and did not exceed not more than one hundred or two hundred copies.

On that time, there was neither any freedom of the press nor any press laws in India. The authorities could use both censorship and pre-censorship on these newspapers. The printing of these newspapers was not very attractive. Generally, these newspapers printed such things as were of interest to the British residents in India. They printed parliaments reports, news regarding Army and the development in English. Of course, news regarding the Indian rules was also published. Sometimes, these newspapers also carried news-letters and reports from Europe. Latin America, China etc. They had also starting publishing letters to editors, advertisements, news about important social events and prevailing fashion in the society.

In 1816, Gangadhara Bhattacharya and Harchandra Ray launched a paper from Calcutta *Bengal Gazette*

in Bengali. It was the first newspaper in Indian languages. In the year 1818, *Samachar Darpan* weekly started for the first time in Bengali, which introduced "Indian Commerce" among other topics. Some of the oldest newspapers in India are *Bombay Samachar* in Gujarati, published from Bombay, 1832. Times of India in English Bombay, 1838, *Pioneer* in English, Lucknow, 1885, and *Amrit Bazar Patrika* in English, Calcutta, 1868, The Hindu (Medras) 1878.

News agencies in India

Press Trust of India: The Press Trust of India (PTI) was set up on27th August, 1947, as a non-profit sharing cooperative of newspapers, with a mandate to provide economical, efficient and unbiased news service to all subscribers without discrimination. PTI took over the Associated Press of India (A news agency set up ion 1908) and the Indian operations of the Reuters news agency and began functioning from 1st February, 1949. As a part of its modification program, PTI news operations were computerized in 1984. With a view to reach its services directly to the subscriber and also to overcome the various snags to point to point transmission, PTI is increasing taking resources to satellite transmission. To facilitate the task of modernization, PTI has created a separate R & D wing. PTI has brought out Economic Service, Corporate Trend, and Science Service. PTI –TV has been producing news clips, documentaries and video films for Doordarshan and other clients. PTI is a leading participants in the pool of news agencies of the non-aligned countries and the organization of Asia-Pacific News Agencies.

United News of India: United News of India (UNI) started news operation on 21st March, 1961. The agency was founded by newspapers themselves to promote competition between the country's two news agencies so that subscribes get the best of both. The first seven years from 1961 to 1967 were a period of consolidation. From 1968 it started the growth phase. Growth in UNI has been vertical and horizontal Growth has come through launching of a number of sister services which besides yielding additional revenue, have taken the agency into new area in which it can make itself useful. UNI was the first news agency in India to go on to satellite communication. UNI is going with its modernization plans including computerization of its news operations.

Other Indian News and Feature Agencies: Associated News Services, Cartographic and News Stories; Data News Features' Indian News and Features Alliance (INFA); India Press Agency (IPA) ; National News Service; and New Features of India etc.

Asia News Network: Asia News Network (ANN) was the outcome of a shared need the need for effective, yet cost-effective coverage slow down. Newspapers needed intensive coverage of events in various Asian countries - after all, their economics were interlinked- but lacked the resources to post correspondents in each Asian capital. Wire agencies filled the void, but not always. Their perspective was foreign, and sometimes their correspondents erred in understanding Asian Priorities. ANN was born in March 1999. The founding members represented India, Thailand, Philippines, Singapore, Malaysia, Indonesia and Vietnam. In the years to follow, newspapers from China, Korea, Japan, Bangladesh, and Sri Lanka joined the fold. The network was formed with clear objectives- to enhance and improve news coverage of Asian affairs; to provide member newspapers with reliable access to news sources in Asia and to help promote the professional development of journalism in the region. The catalyst for the editors to come together was the Asian Media project of Germany's Konrad-Adenauer Foundation. The ANN news exchange revolves around free exchange of news stories between the member publications on a real time basis. Thus, reports filed to newsrooms across Asia are accessible within minutes to editors of all member newspapers.

ANN also runs a website http://asianewsne.net which is put together by a dedicated team of journalist working in Bangkok. The website has been specially designed to be user-friendly and to live up to the modern buzz line that one should have all the news needed with just a click on the mouse. The journalists are drawn

from the various member newspapers. Besides gaining experience of working in an environment different form home, they also acquire an Asian perspective because of the exposure. The network's administration is managed by an executive board comprising editors of members newspapers. The chair is rotated annually. The executive board meets twice every year. The annual meeting of ANN are planned around media events for the network's newspapers, and involve interactions with Heads of State.

A fresh legislation providing for the establishment of a Press Council was enacted in 1978. The Act came into force on 1st March, 1979. The objectives of the revised Press Council are:

1. To preserve the freedom of press and
2. To improve standard of newspapers and news agencies in the country.

One of the main functions of the press council is to enquire into complaints one's source of information. The verdicts of the Press Council are not judicial, pronouncements, and it cannot impose punishment on offending journalists or newspaper. The council also cannot award damages to the aggrieved party. The sole strength of the Press Council lies in its appeal to conscience.

The registrar of newspapers of India: The office of the Registrar of Newspapers India (RNI), also commonly known as the Press Registrar, was created on 1st July, 1956. The prime function of RNI is register all newspapers published in the country, to issue certificate of registration to them, and to maintain the particular rating to them in a register. It oversees the allocation of titles, news print and certificates for the import of printing and allied machinery required by newspaper establishments and also sees to the enforcement of the provisions of the Press and Registration of Books Acts and inspect newspaper records and documents. The RNI carries out frequent checks to find out whether the newspapers registrar with it are published regularly and also whether the circulation figures claimed by the newspapers are credible.

The annual report published by RNI, entitled "Press of India" contain valuable information and statistics relating to the press.

Audit Bureau of circulation: The Audit Bureau of Circulation (ABC) set up in 1948, is an independent, self-financing private organization. IT is charged with the responsibility of conducting regular audit of the "net circulation of newspaper" and issue certificates of Net paid circulation, every six months. ABC has very high reputations for reliability and impartiality. It provides for a check on inflating the number of readers for the publications. ABC report helps the advertisers as well as the newspapers to work out appropriate business strategy.

Media of Communication

The media has played a major role in shaping Indian society both in shaping Indian society both I the pre as well as post-independent era. The print medium, which included the newspapers and others freedom related literature contributed in a big ways to freedom struggle, freedom came, and the country came face to face with a host of socio economic political problems. The main role for the media under these circumstances was that of information and educating the masses. The print medium, which was the dominant medium during those days, has its limitations with a huge percentage of publication being illiterate. The role of radio, and finally during the 1980s, the role of television become very important. During the 1980s, the electronic medium was totally under control of Government, with Doordarshan and AIR being the only broadcaster.

For the purpose of classification the media of communication can be classified as following:

a) Print Media: Books, Newspaper, Magazine etc
b) Broadcast Media: Radio Television and Radio
c) Narrowcast media: Film and Cinema, Cable Television
d) The New Media: Online Newspapers and Magazines, Internet Radio etc

Printing:

As the contribution of print media is significant in dissemination of agricultural information Via various means viz. Extension literature, farm journal, magazine and news papers. The printed word in the journals, magazines and newspapers play a dominant role in communicating form information. Today farm journals occupy a prime place in the scheme of farmers know-how exchange system. It is considered important tools to disseminate relevant development messages to the rural audience. Farmers think written words are never wrong and hence the print media has more impact than any other medium. Apart from serving as an agent of reinforcement, journals help the readers to refer again the information or to preserve them for future use. The printed word has a lasting power far beyond that of the spoken word or the visual image.

It is believed that Johannes Gutenberg of Germany was the first to develop printing around 1439. With printing, there was a revolution in the way communication developed. Knowledge and information, which were till then the monopoly of certain sections of the upper strata of society, slowly became available to ordinary people. Spread of knowledge, available in print between two hard covers, was fast. Schools, colleges and universities were places with their libraries making books available to those who wanted to read even if they could not afford to buy them. Later newspapers and journals also became popular. The printing process that Gutenberg developed later underwent much changes and mechanization. Today printing has become highly sophisticated and the print media, namely newspapers, weeklies and monthlies use these modern printing presses which are capable of printing very fast. Computers have further improved printing operations.

The invention of paper and printing led to the development of newspapers. Newspapers are printed and published for providing information of public interest, advertisements and views. These publications are usually issued daily, weekly or at other regular intervals. Newspapers were first published in countries like Germany, Italy and the Netherlands in the 17th century. Later it spread to countries all over the world. Early owners of newspapers were people who took up journalism to fight social problems. You may now ask what is 'journalism'. Journalism involves the collection of information and communicating it. It also involves the selection and editing of information and printing and presentation of events, ideas, information and controversies

in their proper context. Major functions of newspaper may be:

- Newspapers inform readers objectively about what is happening in their community, country and the world;
- Newspaper comments on the news in order to bring development into focus;
- Newspaper provides the means whereby persons who want to sell goods and services can advertise their wares;
- Newspaper campaigns for desirable civic projects and to help eliminate undesirable conditions;
- Newspaper gives readers a portion of entertainment;
- Newspaper serves readers as a friendly counselor information bureau, and champion of their rights.

The first magazine was believed to have been started in 1704 by Daniel Defoe. It was a weekly periodical called *the Review. Defoe's Review* was distinguished from the Newspapers of the era because he published features materials in addition to news. Magazines began to have mass circulation after the American Civil War. Apart from growth in literacy and availability of cheaper printing that were responsible, the arrival of Women magazine was also responsible. In addition were the Postal Act of 1879, which permitted mailing magazine at cheap rates and the spread of the rail road which carried people and publications westward from the east coast, as well as the reduction in the prices of magazines due to competing price war. The sustenance and profitability of magazine business, made possible by advertisement has brought much influence on magazine content. Since the major aim of every business is to make profit, no magazine would like to lose its advertiser. Therefore magazine editors are very cautious in new presentation so as not to offend their advertisers. The questions emerging is that how can a magazine function, offering depth, variety and detail content when its editorial content is influenced by advertisers?

Development of books started with the invention of writing. Over 5,000 years ago, alphabets were developed independently in several places around the world. Ideogrammatic (picture-based) alphabets appeared in Egypt (as hieroglyphics), Sumerian (as cuneiform) and urban china. Ideogrammatic alphabets require a huge number of symbols to convey even the simplest idea. Around 1800 B.C, these were the first elements of a syllable alphabet -an alphabet employing sequences of vowels and consonants, that is, words The syllable alphabet, aided by Semitic cultures, slowly developed, and eventually flowered in Greece around 800 B.C and was subsequently perfected. These alphabets of necessity were used for writing in trading, a development which helped their Greek city-states to thrive in business. However, a medium was necessary to carry this new form of communication. Around 100 B.C the Romans began using parchment, a writing material made from prepared animal skins and in A.D 105 mid level Chinese bureaucrat Ts'ai Lun perfected a paper making process employing a mixture of pressed mulberry tree bark, water, rags and a sophisticated frame for drying and stretching the resulting sheet of paper. With the emergence of literacy-the ability to effectively and efficiently comprehend and use written symbols-the social and cultural rules and structures of preliterate times began to change. However, communication was still quite limited, because writers could reach only those few literates who held their hand written scrolls or letters.

Internet is changing the way books are distributed and sold. But this new technology, in the form of e-publishing, the publication of books initially or exclusively, online, offer a new way for writers ideas to be published. The physical form of books is changing. E-publishing can take the form of the d-books (digital books) and print on demand (POD) and many d-books are designed to be read on handheld computers called e-books. Online magazine or webzine have emerged made possible by convergence of magazine and the Internet. For example, Time end Mother Jones now have online edition. There are also others who are strictly online. Online magazines face certain challenges as at now. One is how the subscription for them should be charged. This difficulty is imposed because web users are accustomed to free access to sites. Besides, pure

online magazines must generate their original content, an undertaking that is very expensive. Besides, they have to compete online for readers and advertisers as equals with webzine subsided by paper magazine. In addition, purely online magazines must also compete with the other websites on the Internet.

Development of Farm Publication:

The first farm magazine in agriculture was published in Paris in the year 1763 called "Agriculture De Franche", followed by "Census Agriculture" by United States of America in *Washigton in 1840. The journal called "Poultry World" was published in London. By the middle of 19*th century, there were many farm journals on agriculture, poultry, dairy and allied subjects from various countries.

In India, the efforts were started from "Bengal Agricultural Gazette under the editorship of Mr.Robert Knignt was the first governmental effort to disseminate agricultural information to Indian farmers. Plantation news was started next to cater the needs of the planters. Mahatama Gandhi, the legendary leader has started Harijan to reach the masses. The weekly Harijan also dealt with agriculture and cottage industries in simple language. The first farm magazine in Hindi *Krishi Sudhar* was brought in Agra (1914) followed by *Krishi* (1981). *Zamin Doot* – a farm weekly was published at Nellore, Andhra Pradesh in 1928. Agriculture and Livestock was started by Imperial Council of Agricultural Research by 1930, which was later renamed and published as *Indian Farming*. *Indian journal of Agricultural Sciences* was published in1931. Bihar Government had initiated Gaon in 1938. Another venture *Vasundhara* was published by Kolhapur *Ryot Sewa Sangh* of Maharashtra. Another Hindi farm weekly *Krishak Jagat* was brought out from Nagpur in the same year. In 1947, the Indian Council of Agricultural Research started Hindi journal *Kheti* followed by *Phal Phool*. The number of farm journals must have touched 400 marks by now. However, all of them do not publish exclusively for the farmers. State Agricultural University, Institute of Indian council of Agricultural Research (ICAR), voluntary organizations now brings out farm journals. Most of these farm journals have small readership. Successful ventures among them include Changi Kheti (Punjabi), Haryana Kheti and Shetkari (Marathi). Besides, *Sevagram, Krishak Jagat, and Kisan Bharati, Intensive Agriculture, Indian Farming* and *Kheti* are quite popular. In spite of several advances of farm journals, it is difficult for most of them to mobilize more than a thousand readership. Most of the governmental sponsored publications are highly subsidized.

Almost all the agricultural universities bring out farm journals apart from their other technical bulletins. But most of the farm journals published by the Agricultural universities have a nominal languages has done at commendable job in communicating farm technology. Central Farm Information Bureau, which was established in 1958 in Directorate of Extension, Ministry of Agriculture also communicates farm technology. It has revealed that information through farm publications are perhaps the most favoured and widely hood of enhanced reading and proper utilization of the information (Rathore et al. 2004). The dissemination of farm information in local language is the main aims of farm magazines (Sherif et al., 1997).

Problems with farm journals:

The farm journals suffer from a number of problems as given below:

Financial problem: Apart from government sponsored journal, the private journals also struggle from economic survival, low readership, inability to attract big advisements, in rurally oriented developed journals pose economic hurdles to sustain longer.

Delayed publication: Most of the journals coming out of by government institutions and agricultural run months late. Thus, the contents for which they are meant become irrelevant.

Lack of trained farm journalists: Farm journals suffer from genuine problem of finding worthwhile articles written in vernacular languages for the farmers. People trained in rural journalism are hard to find.

Technical Jargons: Use of technical jargons is so much that reading and comprehension is difficult for low-literate or neo-literate readers.

Content and Presentation: Choice of contents is too general. Some types of articles are repeated year after year. There is little involvement feedback or input from the farmers. The articles are mostly oriented towards agricultural technologies. Socio-economic and situational problems of farmers are seldom highlighted. Similarly, presentation is mechanical and dull.

Suggestions for improvements of farm journals:

- Farm journals must cater to miscellaneous interests of framers and provide content to suit resources as well as tastes of different categories of reads. This required familiarity with target group, their environment, crops, living, festivals, etc. The contest must reflect these interests. Presentation of articles should also be interesting. Straight-cut detail on technologies look too mechanical. Feature articles using personal direct personal references and local examples may enliven the material. Besides, success stories of farmers, agricultural news, farmers' experiences, and discussion on relevant indigenous practice may also be tries.
- Use of illustrations and photographs should be promoted. Clearly idenficable photographs or even line drawing may add to reading ease of texts. Close- up photographs showing details are particularly desirable.
- Editor of farm journal should preferably be agricultural graduate trained in farm journalism/ journalism and exposed rural life and farming. He should screen articles and take efforts to encourage authors to write originally for the framers. He should conduct studies to gauge farmers' reactions and preferences. He may formulate clear cut guidelines for authors for writing. He should screen, modify and adapt articles to readers.
- There is urgent present need to simplify technical terms and find ways to ease the burden of measurement units. It requires effort to collect local equivalent technical terms and standardize them for consistency in use.
- Layout, typography, preparation of illustration, colour scheme of printing and proof reading should not be left to chance. Preparation of dummy out of revised proofs may ensure better publications.
- Accuracy in reporting technical information is a must. Name of chemicals, verities and their dose must be carefully checked.

Opportunities in farm journalism in India:

- Employment generation
- Provide timely information to local people
- Development of the nation
- Food security and sufficiency
- Enhance socio-economic status of local people
- Decrease disparities month the people
- Increase education level among the people
- Empowerment of local people.

Limitations of farm journalism in India:

- Availability of local specific information

- Illiteracy of people
- Local Language
- Needs the local people
- Lack of skilled people to disseminate information
- In coordination between local agency and journalist
- Translation of technical information into usable form
- Difficulty in getting feedback form farmers
- Delay of information

Rural newspaper:

The rural news papers should be participatory and people oriented. It is a publication by and for the rural people. Its content is focused on the rural community. The language must be the language spoken by the people. The newspaper enables different target groups in rural areas to practice writing and it is the reading material for neo-literates. The rural news paper can help the language become literacy language; provide functional knowledge to the rural people on health, hygiene, agriculture, etc.

The rural newspaper can assist in the adoption of appropriate technology, technology refinement, developing local reforms and promote. It is the responsibility of the rural newspapers to safeguard and promote the cultural ethics and practices that have been valuable and useful to the rural community.

Print media play important role in socio-economic and political development of the nation. Even today with the onset of second communication revolution (T.V, Computer, Email, Internet etc.) the importance of print media cannot be ignored. Increasing rural literacy throughout the developing region of the world invites print media to unexpected corners (Trikha and Hasan, 1999).

Broadcast media (radio and television):

Telegraph and telephone were important predecessors of radio. Samuel Morse developed the telegraph in 1844 and it was a principal means of news and information. Alexander Graham Bell demonstrated his telephone in 1876 and this invention gave birth to the concept of "broadcasting" i.e. sending of a single message as sound which can be simultaneously received by large numbers of people in different locations. In Germany, Heinrich Rudolf Hertz successfully transmitted electromagnetic waves without any other form of conduction. Hertz's name is adopted as the measure of all radio frequencies (i.e. MHz-MegaHertz). From mere curiosity and technical experiments radio became a truly powerful and popular medium of mass communication. After it was developed in the west we had radio by the 1920s and the first formal radio station was started in Bombay.

Developed countries are making extensive and successful use of electronic media to supplement the learning activities in their transfer technology programme. The most common electronic media now used to strengthen the transfer technology programme are Radio and Television.

Radio:

Radio is most popular mass media, among majority of rural people. Transistor radio sets are cheap and convenient to use. There is no problem of electricity maintenance and repair. It is very influential communication medium. This medium plays an important role for the transfer of technology from the centers of origin to the ultimate consumer. Elangovan (1994) reported that radio was preferred by the farmer for weather forecast and new technologies. The medium is cosmopolite in approach and is suitable for communication to millions of

people widely dispersed and suited in remote rural areas.

Special features of Radio:

- It is cheap
- It is portable
- It provides information entertainment and education
- It can quickly transmit message in most remote areas.
- Distance learning is possible through radio
- It is helpful in forming public opinion.
- Listener can get the message even while engaged in other activities.

Limitations:

- Radio alone cannot bring change
- Listeners have no control over connect or speed of message.
- It is difficult to transmit complicated message through radio.

Modes of programme presentation:

Radio programmes are presented in the form of news, interviews, discussion, documentaries, drama, quiz, question-answers etc.

News covers many different topics in short time. Interesting facts and stories of current human interest are broadcast at regular intervals.

Documentaries: Documentaries are special progarmmes on events of past, present or future interests. They are different from news in the sense that topic of current or historical importance are treated in depth. It is collection of a variety of materials with narratives.

Interviews: Interviews of prominent personalities and member of the audience create interest. Sometimes experts and other persons involved in an important action may also be interviewed to cater the interest of the audience.

Discussion: This format uses a numbers of people giving on a topic. The participants may be experts or just people having information on topic of concern. Panel discussion requires a moderate to co-ordinate discussion and bring consensus.

Magazine: Magazine programmes can combine a number of format like news, interviews, drama and a number of topics can be covered.

Dramatic: Dramatic programmes includes such serial or fictional works which tell complete story in one or more installments. There may be one or more character and story, should be developed through dialogue of character.

Spot Announcements: These are brief comments (10-60 seconds) between, musical numbers or prgrammes. They provide information or suggestion for action. These are basically advertisement of some development idea/message.

Quiz and Questions-answers: Quiz and question-answer programmes are good ways to involved audience and assess knowledge with interest. Audience may be asked to send questions or problems, which may be answered by presenter or prominent personality in interesting manner.

Radio Broadcast: In India, radio broadcasting started as far back as 1927. All India Radio started specialized unit called Farm and Home unit in 1966 to cater to the rural audience. Rural programmes are broadcast by all stations in local dialects. The programmes are broadcast by all stations in local dialects. The programmes include hard core technical recommendations, field –based programme covering festivals, meetings, functions, etc. and interview, recording of folk music, folk songs, agricultural quiz, spot announcements and documentaries. Many different types of programmes have been tried successfully for providing information in interesting manner like Farm School or Air and Mike in the village.

Farm School on Air: Farm school on Air was broadcast form many stations having farm and home units. This was a novel programme in collaboration with State Department of Agriculture and State Agriculture University. All India Radio developed strategy to deliver farm information systematically to framers in far flung rural areas. Literate farmers with access to radio and evidence of interest and influence in agriculture were selected with the help if the State Department of Agriculture. These farmers were supposed to serve as opinion leaders for disseminating scientific information to average frames. Programmes were divided into lessons. Experts were selected to present the progremms in slow pace by repeating the key points at the end of each progrmme questions were broadcasts. The listeners were encouraged to send their doubts and questions. Test were also conducted and registered farmer received certificates.

Field based programme: Studies have indicated that farmers like to here progressive framers and known experts. Local fairs, festivals and events attract them. Folk music and songs add local falvour. Programme recorded outside are preferred then those produces in studio. It is generally suggested to keep 70 % field based progammes. Agricultural information need to be synchronized with the activities being taken up in the field. Rural broadcasters must have empathy for the woes fo listeners in order to locate appropriate sites, festivals, talents, etc. which can add local flavor and make programmes interesting. Rural broadcasts can be energized by creative use of folk songs and stories to convey development message.

Radio Drama: It has been found that dramatic presentation of even technical information attract farmers. Dramatic presentation of technical programmes has been tries successfully in Nepal. The programme "Budi Ama and JTA" featuring two characteristics old lady and JTA (Grass root extension worker) provided information on farm problems in interesting manner. In each episode the old lady began with her farm and home problem and the extension worker in a bid of ease out her problem, narrated the solution. This was liked by framers and the programme ran for several years.

Prgrammes with local bias: Farm broadcasters must have precise and locally relevant message. Radio progrmmes should be synchronized with the timings of agricultural operations and programmes of agricultural development efforts. IT has been reported that Radio DZLB situated in the University of Phillippnes at Las Banos aired programmes with information about certain seed developed by International Rice Research Institute (IRRI) in the morning and framers started enquiring about the supply by the afternoon. Thus, need-based situation-specific broadcast have appealed.

Use of Radio in Extension work: The radio may be used in extension work apart from encouraging individual listening. In this reference, Rural Radio Forum (*Churcha Mandal*) is one of the effort. Rural Radio Forum is local discussion group organized by development worker. Community listening and discussion are encouraged with the help of extension worker. Community radio sets are provided for group listening. Advance information is provided about progammes to be broadcast and then group discussion the programme. Farmer reaction on relevance of topic, difficulties in listening, queries, etc. recorded by the extension workers. Such feedback are sent to the radio station for modification in programmes are fed back to the radio station. Extension workers may also record useful prgrammes of current importance of local relevance. Audio tapes can be played with the village groups at convenient time and discussions can be organized.

Local Radio/ Community Radio: Looking to the popularity of radio as medium of communication and its effectiveness in development, All India Radio (AIR) ventured into a new phase of broadcasting by experimenting with the concept of local radio station. A local radio station serves a small area (a district or so)with similar agro-climatic and cultural situations. The programmes are supposed to reflect local culture and aspirations. They are supposed to support to support on-going development programmes. Field based programmes using local talents, give voice to people's views. Local culture finds more air time. Community service progrmmes should provide opportunity to people, their organization to broadcast matters of information. Radio thus becomes voice of the people and catalyst in development. Unlike regular radio, extension workers can find air time.

Agricultural programmes on Radio:

All India Radio (AIR) – the state controlled radio network - started broadcasts for farmers in the late 1950s. These programs cater to the day to day seasonal needs of the farming community and provide information on the latest agricultural technologies. They are broadcast for 60 to 100 minutes every day. Earlier, All India Radio has been using the existing MW and SW network for broadcasting agriculture based programmes. The emerging technology is in the form of the FM transmitters. This has the capacity to provide high quality output and also deliver local content in the area of its range. As the infrastructure for the FM transmission is widely available with the All India Radio, the locality-specific agricultural programmes can reach to farmers in rural area in their local language/dialect through FM Radio transmission by the Stations covering rural areas without much capital cost.

At present 96 FM stations of All India Radio are catering to the rural areas and produced separate locality-specific programmes for the farming community. AIR has expanded its Agriculture Broadcasts with the launch of an exclusive project on Mass Media support to Agriculture Extension entitled 'Kisanvani' from Feb. 2004, in collaboration with the Department of Agriculture & Cooperation, Ministry Of Agriculture, to keep local farmers informed about the daily market rates weather reports and day to day information in their respective areas at micro level. Presently *Kisanvani* (half an hour duration daily, 6 days a week) is being broadcast and relayed from identified 96 AIR stations across the country. In addition, non-formal educational programs known as "Farm School on Air" are also broadcast by AIR.

Television:

Television has unique advantages over other mass media. While its provide sound vision, and movement. It can reach largest number of people in shortest possible time. It is a medium unlike any other. TV screen depends on close up. People can watch sitting in their homes. Television viewing does not demand extra strains to go out or read a book and the message are pre-selected, shorted out to present in simple manner. The medium is quite suitable for subjects that require dramatized presentation, identification of objects, live demonstration of complex technical process depicting animated presented and presentation of experiences, places, processes unfamiliar to viewer.

One of the technological marvels of the 20th century was television invented in 1920 by Baird. The word *television is a hybrid word, created from both Greek and Latin. Tele- is Greek for "far", while -vision is from the Latin visio,* meaning "*vision" or "sight". It is often abbreviated as* ***TV or the telly.*** John Logie Baird was the world's first to demonstrate colour transmission on July 3, 1928, using scanning discs at the transmitting and receiving ends with three spirals of apertures, each spiral with filters of a different primary color; and three light sources at the receiving end, with a commutator to alternate their illumination. On August 16, 1944, Baird gave a demonstration of a fully electronic colour television display. In India, television started in 1959 on an experimental basis and the first television station was set up in Delhi. The beginnings were modest and slow but television was popular and became available in colour in 1982. Today Doordarshan has one of the largest

television networks. From early 1990s satellite television also came to India and later Direct to Home (DTH) television. You will learn more about television in a later module.

Television signals were first transmitted over the air, and viewing traces were limited to the number of channel that could be picked up by rooftop antenna. Now, cable, satellite delivering systems and the web are treading the number of channels and programming options. We have:

1. Broadcast
2. Cable television
3. Wireless cable (multichannel multipoint distribution service, MMDS).
4. Direct broadcast satellite (DBS)
5. High-Definition television
6. Web-delivering system.-(interacting-combination of internet and broadcasting. It makes it possible to receive both television signals and the web, both over a television set and through a computer.

Agricultural programmes on T.V: The farmers liked others view television to spend leisure time in agreeable manner. Thus we must provide entertainment along with messages for improvement of the farm and home. The factors involved in television programme for the farmers are timings when agricultural programme should be telecast, frequency, length of the programme and mode of presentation. Whatever be the content of the programme good qualities is expected not only in visual but also in audio terms . In procuring agricultural programmes, both stuio and outdoor broadcasting (OBS) have a place since outdoor recordings brings a sense of immediacy and understanding to the viewers. Demonstrations on farming methods brought to farmers by television have great value of making converts to better farm practices. Farmers respond readily to what is said by other farmers. Realistic senses of local people in native dialect attract attention of farmers. Agricultural Programmes must be factual. Use of still films and balance between studio and field based production is a must.

Growth of Television in India:

Television programmes started in India on September, 15, 1959 on experimental basis for a 40 KMS area around New Delhi. First school television was started in October 1961 for schools of Delhi. In 1965, the general service programmes were introduced for one hour on four days a week. It become a daily service by August 15, 1965. A special programme for farmers called *Krishi Darshan* was launched on January 26, 1967. The rural programmes are now telecast from all centres and a low power transmitters to familiarize rural viewers will latest technical knowledge about farming, weather forecasts etc. as much as personal health, hygiene, education and family welfare. Country second television come on October 2, 1972 followed by Srinagar, Amritsar, Calcutta, Madras and Lukhnow. From August 1, 1975, *Doordarshan* has undertaken the satellite instructional experiment (SITE). One of the most ambitious project in the field of Mass Communications. It was a one year project covering 2400 villages spread over in six states. Site and to improve rural primary school education provide teaching training, improve agricultural, health and hygiene and nutritional practices and contribute to family planning and national integration. Community TV sets has been established in the villages for viewing. Site agricultural programmes disseminated programme on dryland farming advise on poultry and animal husbandry, recommendation of practices of crops etc. The end of site was followed by site community projects providing installation of six terrestrial transmitters. Another significant event that determined rapid expansion of TV services was the coverage of the Asiad games in November 1982. In 1982 India introduced its own multi purpose satellite INSAT – IA which was used for telecasting, tele communication meteorology and radio. It was on August 15, 1982, the national programmes were relayed simultaneous from all the centres. INSAT – 1B led to a measure expansion of television broadcasting in India and television broadcasting took a

new form. The rapid expansion of transmission facilities also led to establishment of new production centres, thus TV which started in 1959 on experimental basis had spread through length and breadth of the country.

Television expansion in India has always been rationalized on the plea that TV can revolutionaries rural areas by providing information and education. However, this is a common knowledge that due to predominance of sponsored programmes and interest of commercial organizations, TV has become predominantly a medium of cheap entertainment for middle class educated Indians, TA has shown little enthusiasm and activity to serve the needs of the poor ruralites. Agricultural programmes are most of times dull and dry. Some of the criticism labeled against rural television programmes are as below:

- In spite of the access, all the rural people, specially poor cannot afford to buy television sets.
- There is little enthusiasm among urban producers to make programmes interesting for the large majority of ruralist. As a result, rural progammes have very low viewership.
- The themes shown on the television have little relevance to the problems and development efforts going on in the area.
- These is strong emphasis on entertainment based progammes and commercial. Television programmes promote consumerism then development.
- Handful of community sets provided in some remained defunct due to lack of electricity, proper maintenance or democratic management.

Use of television in Extension work :

A rural television (RTV) project was launched by the FAO in 1974 in Sudan. The aim of the project was to disseminate specially designed programmes for the tenant farmers. TV was introduced to inform, instruct and motivate. Generators' were also provided along with TV sets to each village. Existing village clubs which served as a forum for social gathering were use to form TV viewing clubs. Each selected village was asked to nominate one person as TV club monitor to take care of TV set, generator and form TV viewing club to initiate discussion of on rural programmes. How would also initiate activities for discussion for adoption of ideas shown in TV programmes. The monitor were trained to perform these task. Through the programme continued, there were few problems in effective functioning like monitors were not always active and discussion were less frequent. Later, efforts were taken to keep close contact with TV monitors and use TV programmes and village discussion in file extension programmes as well. While it is generally believed that TV can be used successful as a means of communication to rural areas, Sudan Rural Television project showed that rural TV can be effective if complemented by inter-personal communication.

Doordarshan: The overall outreach of *Doordarshan* is to 89% of the population of the country and out of 38.7 million rural TV homes, 25.4 million can see only *Doordarshan* for various regions. *Doordarshan* also covers most regional languages of the country which is highly significant for the use Mass Medial facilities in agriculture. *Doordarshan* (the state controlled television network) has been started telecasting agricultural programs (*Krishi Darshan*) for farmers on an experimental basis in 1966. *Krishi Darshan* is, daily programme (5 days in a week) in collaboration with the Min. of Agriculture, Govt. of India, under the scheme (during Xth Plan) Mass Media Support to Agriculture Extension is being telecast at 1800 Hrs. This field based programme covers various aspects of Agriculture, Horticulture, Animal Husbandry, Dairy & Rural life of farmer.

Major milestones

1936- All India Radio (AIR) was established in 1936. (Name has changes as Akashvani in 1957).

1947: The press Trust of India was established

1959 - Television started in India as an experiment.

1961: United News of India (UNI) was established

1975 - SITE Satellite Instructional Television Experiment (SITE) programme starts

1976 - Doordarshan, which was AIR's television arm, becomes a separate department

1983 - Government sanctions a huge expansion of Doordarshan

1997 - Establishment of Prasar Bharati

Narrowcast media (film and cinema, cable television):

Film is a medium of communication which combines visual and audio (audiovisual). It contains the recording of a story, acted by people to make it as close to reality as possible. The Collins English Dictionary defines film as a sequence of images of moving objects photographed by a camera providing the optical illusion of continuous movement when projected onto a screen. Types of Films include:

a) Comedy
b) Tragedy
c) Melodrama
d) Adventure
e) Horror film
f) Science fiction
g) Music video
h) Documentary
i) Biography

If we try to differentiate between film and television , the process that led to the development of film started in 1873 while that of television started about 11 years after, that is, 1884. Movies are "larger than life" and movie stars are more glamorous than television stars.3. Film is always pre-recorded while television had only live transmissions until 1951. Pre-recorded programs were introduced when Lucille Ball introduced syndication in 1951 and thereby making rerun possible. Films are largely independent, but networks control what appears on the vast majority of local television stations.. Film has cinema audience while television has home audience. Film is more expensive to produce while television production is cheaper. Film contains only one type of program while television offers variety of programs to choose from. Film is simply rated through the box office while television was initially rated through a rather complex process of an audiometer, and later changed to the use of people-meter. Neither the audiometer nor the people-meter accurately served the purpose.

When we discussed the origin of mass communication two inventions were mentioned . The first was the efforts of Samuel Morse in sending messages using a code in 1835. Later on the international Morse Code was developed in 1851. Until, recently we had the electric telegraph of Morse to send messages across the continents. In course of time messages could be sent without using any wires or cables. The cell phone that we use today is a fine example of wireless communication.

In photography, images are produced using light. Photography was developed in the 19th century by two people from France, Nicephore Niepce and Louis- Jacques-Mande Daguerre. Till a few years back we were taking black and white photographs. Later colour photographs could be taken using an emulsion. Newspapers, magazines and advertisements used photography. By the end of the 20th century photographers began using the digital technology, making photography easier and the cameras user friendly. Even cell phones today have such digital cameras.

Traditional media are also a part of rich heritage. They have as a base our strong oral tradition. They belong

to our own land and are strongly rooted in our culture. They are as varied and diverse as our culture itself. Life in India is deeply influenced by agriculture and religion. So also are the seasons. From very ancient days we have been having fairs and festivals celebrated with spontaneous songs and dances. These songs and dances are traditional forms of media which inform, educate and entertain people. The advent of more faster forms of media has affected traditional media. However the performers or communicators and the audience in traditional media are known to each other unlike in radio or television. The environment in which the performances take place is natural, known and friendly. The messages are also simple; the content known and the language and idioms are familiar. Unlike other modern media, people never get tired of them. Let is consider the example of the Ram Lila celebrated and performed all over north India. The story of Ramayana is known to everyone and so are the performers. They repeat the same story every year, yet people come in large numbers to see them. But can you see an ordinary Hindi film a number of times? There are several forms of traditional media. They are known by different names in different regions. Some common examples of traditional media are story telling, folk songs, street theatre and puppetry. Some forms of traditional media like traditional songs and mythological stories are written down as proper text. But different forms of folk media are generally spontaneous or are made on the spot.

The New Media (Online Newspapersand Magazines, Internet Radio etc) : The New Information and Communication Technologies (ICTs) such as Internet brought to limelight the phenomenon of the new (online) media. The online media is otherwise known as the new media because it is a departure from the old or conventional media of radio, TV, newspaper and magazine to internet, internet radio, online newspapers and online magazines.

The Internet: Internet as a worldwide, publicly accessible series of interconnected computer networks that transmit data by packet switching using the standard Internet Protocol (IP). It is a "network of networks" that consists of millions of smaller domestic, academic, business, and government networks, which together carry various information and services, such as electronic mail, online chat, file transfer, and the interlinked Web pages and other documents of the World Wide Web. Internet could be described by four major characteristics. They are:

1. Interactivity, that is, ICTs effective two – way communication.
2. Permanent availability, the new ICTs are available 24 hours a day.
3. Global reach; bridging the geographic distances.
4. Reduced costs for many; relative costs of communication have shrunk to a fraction of previous values.

Internet Radio: Live Internet radio was born on September 5, 1995, when progressive Networks transmitted the Seattle mariners and New York Yankees game online. Before then, the University of Kansas made history on December. 3, 1994, when its student-run radio station, KJHK-FM, was among the first stations to go live on the Internet. The success stories of some of the radio stations that first established Internet presence quickly spread throughout the radio industry as other stations eagerly connected to the Net. Some radio stations' websites are merely promotional vehicles for their over- the-air counterparts, with web pages consisting of on-air personality biographies, play lists, audio shorts of new songs, and community calendars. Over-the-air use is slowly decreasing among listeners who use the Internet in the developed countries of the world.

Web audio files can be listened to at anytime regardless of when they were first "aired". Net casts can be listened to from anywhere in the world regardless of the place of origin. Online users can both listen to radio and watch visuals too. Songs, lyrics, news can be seen via text, graphics or video etc. Net casts can be listened to while doing other things. It allows multitasking.

Online Newspaper: The phenomenon and features of online newspaper are quite similar to that of webzine.

Using a home computer and a modem to couple the telephone to the computer and by dialing the access number, the subscriber is linked with the database, which provides a 'menu' of available information, including the list of electronic newspaper. After selecting the newspaper, the subscriber searches an index of categories such as front page, sports, weather and leisure. From these categories, the subscriber selects a given story from coded headlines, and the story then appears in textual form on the video display terminal or home television set.

Online Magazine: Online magazine is also known as Webzines. This is the soft copy/online version of magazine. In the developed world, webzines have really been adopted, although they started with the production of online editions of their hard copies.

Media systems of many nations have undergone positive changes as a result of the impact of international communication. This is particularly true in the Third World where the various media systems are desirous of countering the negative effects of cultural/media imperialism. In the process, they undergo a lot of positive changes necessary for growth so as to be able to compete favourably with media systems of the developed countries.

Farm Journalism:

Journalism is basically the communication of news and information to a larger mass at the same time. Journalism is defined as the profession, which concerns itself with the procurement, processing and publication of news and views. When the communication of news and information is related to the field of agriculture, it is farm or agricultural farm or agricultural journalism. Hence, farm journalism can be defined as the communication of agricultural related information to a larger mass of audience. Agriculture is now becoming more knowledge intensive. Knowledge is often a substitute for land water, since it helps farmers to produce more form the same plot of land and same quantity of water (Swaminathan, 2006).

They very purpose of farm journalism is to transfer knowledge and skill; or to be precise the package of practices about various crops written by scientists or subject experts to frames for betterment of the farming community. In short farm journalism aims in the betterment of farming community through transfer of knowledge and skill (Kumar, 2006). Thus, journalism is the collection, preparation and dissemination of rural and related community and feature material link such media picture as pamphlet, news later, newspaper, Radio, Motion picture, TV, and books.

Farm Literature Production

Researches are meant for the benefits of common man, but still many of them are beyond their reach. Not to speak of agricultural sector. It is the duty of every extension professional to disseminate knowledge regarding the various agriculture and animal husbandry related activities for enhancing the production. The best method of choice for this purpose is mass media. Today journalism has immense importance in the day today activities of human life because with the help of journalism we are aware about, what is going in world. The most important aspects of journalism particularly farm journalism that of due importance are, writing news or news articles in newspapers and magazines and also in radio and television broadcasts. Now a days, special emphasize is given to the style of writing characteristic of material in newspapers and magazines, consisting of direct presentation of facts or occurrences with little attempt at analysis or interpretation. Those materials will be of current interest or wide popular appeal.

The important purpose of writing is to inform. The way of presentation should be like that the average farmer should understand it. It is the duty of us to inform the audience what regarding his information needs. The main goal is to communicate accurately. Here let us discuss preparation and use of various kinds of farm publications useful for dissemination of agricultural information.

CIRCULAR LETTER

It is a quick and cheap method of communication and proves very effective if done well. **This is reproduced and sent with the same information to many people periodically or on special occasions to maintain continuous contact with farmers.** To communicate some general information, which could best be put in the form of a letter, one of the best teaching devices one can use is a circular letter. To village people, even partly literate, receiving a letter is an important event. Receiving such mail will have a great influence. However, the value of a letter will depend mostly on how well you write it. **Circular letter is written by the extension agent to particular group farmers or homemaker in connection with extension work.** This should not be regarded as a substitute for personal contact.

Objectives

- • To answer to queries relating to problems of farm and home.
- • To send information or seek cooperation on important extension activities.

Technique

Send the letter in time, or if a letter has already been received, send a prompt reply. The content should be clear, complete, to the point and applicable to farmer's own situation. Use simple and courteous language. Receiving such mail from the extension wing or the office connected with the extension work will have great influence on the village people.

A best circular letter serves following purposes:

1. Circular letters can be used for a wide variety of topics, commencing from the adjustment of a plough to the organisation of a village fair and for dissemination of scientific information.
2. It can teach villagers and also save their time to come to the extension wing or block office or even the village level extension official..

3. These are inexpensive. It can be cyclostyled or if this facility is not available, the help oi the schoolteacher can be obtained in using the students to copy it.
4. Such letters must have a personal touch with short sentences and short paragraphs.
5. The personal touch arises interest and makes the letter popular. Such letters should be weekly or fortnightly depending on the need of time and the facilities available. The content should be news and announcements as well as how-to-do-it stories.
6. The cost should not be much, and distribution must be fast. Use the local language or, at least, a common medium. It should :

   a) Be brief and courteous

   b) Be simple, so that it is understood by poorly literate people.

   c) Have a single purpose and write in simple language.

   d) Have a definite reason for writing a circular letter.

   e) Be clear.

   f) Give complete information.

   g) Be clear in statements, which should lead to action.

   h) Be a part of programme or campaign.

Advantages of Circular Letter

1. Can reach a large section of literate people simultaneously.
2. Can be preserved and used for references purpose.
3. Comparatively cheap.
4. Accurate information and minute details can be given.
5. Can be made easy as well as enjoyable to read.
6. Can be used to maintain or increase the tempo of work.
7. Can be used to continue contacts.
8. Can be used to enhance the prestige of local leaders and groups.
9. Can promote literacy.

Limitations

1. It is of little use in areas of low literacy.
2. Cannot be used in exclusion of other methods.
3. Will lose its significance if not carefully prepared and used.

   – If your circular letters prove popular, they may always be expanded. They may be published weekly or fortnightly. This type of letter may contain announcements as well as how-to-do-it stories. To publish a regular letter, you must organize production.

   – It must be organized cheaply enough to finance easily.

   – Distribution must be fast and cheap also. This can be done by cooperative effort.

An Example

A letter from a M.Sc. (Agri.) student of Agril.Extension Division to a farmer in the village Tigipur Alipur Block of Delhi .

Agricultural Extension Division

December 2018

IARI, New Delhi

Shriman Pradhan Ji,

A Farmer's Day has been arranged in our Institute on February 05-07,2013. The ATMA Manager of Alipur has agreed to provide transport facilities to farmers of your village. They will be brought in buses to the institute farm to see the various demonstrations on wheat conducted by M.Sc. Students of Agronomy of our Institute. The buses will leave from the Primary school building Tigipur at 7.30 a.m. All the farmers of your village are very cordially invited to take advantage of this guided tour. The farmers will be received by, Head of Division, Agril. Extension at the farm gate, Head Division of Agronomy, his staff and M.Sc students, will give us a round and explain the details of their experiments. Hope you will bring other friends with you.

With regards.
Sincerely yours,
Ashish Singh
M.Sc. Student

LEAFLET

A leaflet is usually a single sheet of printed matter, sometimes folded. It gives accurate or specific information on a particular topic. It is intended to:

1. Provide precise and reliable scientific information told in simple language about a single practice or item of interest.
2. Serve immediate needs of the farmer.

How to write a leaflet?

Three Major Steps involves plan the script, write the script and review the script

Planning the Script

1. Decide on your message select topics related to the urgent needs of the farmer-have one simple practice or idea at a time.
2. Note down all appropriate points-decide the essential points finally arrive at the desirable points.
3. Select the most important one from the essential points-this forms the central theme.
4. List the remaining essential points in logical order and group the desirable points under the appropriate essential points.

Writing the Script

1. Write your script, with all essential points in sequence, the desirable points supporting the essential ones.
2. Make the most important points catch the reader's interest.
3. Write in simple short sentences-use familiar words-be clear in your words and sentences-avoid being

misunderstood.

4. Address your sentences to your reader.
5. Lead him to action.
6. Be accurate in your information.
7. Be brief.
8. Use illustrations and pictures in the appropriate place.
9. Give details with reference to local situation.
10. Start with an appeal, which will be of benefit to the reader.
11. Round up with confirming what you said at the opening of your leaflet. It will reassure your reader.
12. Mention the source where further information on the topic or help can be obtained.

Review the script

1. Go over the writing, after the completion of it-over after a day.
2. Remove the defect and rewrite, where required.

Advantages

1. Could reach the large section of literate people.
2. Could be preserved and used for a reference purpose.
3. Comparatively cheap.
4. Could be made easy to read.
5. Could be used to maintain or increase the tempo of work.
6. Useful to continue contacts.
7. Can promote literacy.

Limitations

1. Is of little use in areas of low literacy.
2. Will lose its significance if not carefully prepared.

FOLDER

It is a single printed sheet of paper having certain folds. It provides essential, accurate and objective information relating to a topic in sequence on a particular theme. Folder can be used for future reference and can reach more people simultaneously. Printed matter has got more credibility from the receivers. It is intended to:

1. Provide precise reliable and scientific information in a simple language about a single practice or a technology.
2. Fulfill the immediate information needs of farmers.

Writing Folders

1. Planning the Script

a) Select a topic, which is of urgent need and practical utility in the light of your client's requirement.

b) Think out relevant things that you can say about the selected subject.

c) Collect the additional material and information.

d) Prepare a rough sketch of folder on the basis of information to be included.

Materials Required:

1. Good quality paper enable to fold twice or thrice.
2. Pen, pencil and colours or printing machine to produce in large number.
3. Timely and clients' interest theme.
4. All relevant information about theme i.e. subject matter, picture and illustrations etc.

2. Writing the Script

a) Use eye catching, attractive title and give lively sub headings.

b) Write all the points in a sequence.

c) Use simple and short sentences.

d) Write in a narrative form.

e) Attract the readers with important points.

f) Add essential photographs or sketches if possible.

g) Collect the relevant information about the theme,

h) Use simple language.

3. Reviewing the Script

Review the contents carefully in order to find out the lacking. Remove the defect and rewrite, where required. Folder can use single sheet of paper enable to fold different sizes but a width to length ratio of 2:3 may be more appropriate.

Advantages of Folders

- Folder can provide essential information on a topic.
- It can reach a large number of people simultaneously.
- It is comparatively cheap and can be preserved for future use.
- It is helpful even to illiterate farmers if proper illustrations are included.

Limitations of Folders

1. It is of little use in low literacy areas.
2. It will lose its significance if not carefully prepared.

BULLETIN

Bulletin is a printed, bound booklet, with a number of pages containing comprehensive information about a topic. Bulletin is made as and when necessary. A small price may be fixed on some important bulletins. One bulletin contains information about simple aspect at a time. It is a bulkier publication with 20 or more pages; it is normally on a subject that requires detailed treatment. Extension bulletin is formal and is meant to give information on the practical side of the problem.

Kinds of Bulletins

There are basically two types of bulletin

1. Technical bulletin - These are designed primarily to present scientific material to those working in specific fields.
2. Popular bulletin - To present material to people in the field of extension. Extension bulletins are popular

bulletins for extension workers, progressive farmers, instructors in extension training centers.

Objectives to publish a bulletin

- To reach a large number of people quickly & simultaneously at a low cost.
- To provide accurate, motivating, credible and distortion free information.
- To provide support to other teaching methods
- To facilitate use at convenience & to serve as a future reference.

Planning to write a bulletin

How well your words work for your reader depends on how skillfully you plan your writing. Good Planning helps you visualize your readers (identify your subject with their interests & needs. For writing bulletin first the following replies are to given to one self.

Why? The purpose of bulletin, why you want to publish a bulletin. To give your readers information which they do not have, to explain and to give further information. Whether is to be entertaining or argumentative? What response *is* wanted from the reader? What is expected feedback?

When? When the bulletin is going to be used? Will it be of value only for a short time or seasonal or for many years? Estimate the time required to prepare the manuscript, print & dispatch and plan the bulletin in such a way that it reaches the readers in time.

Whom? For whom the bulletin is meant for. i.e. for whom you are preparing bulletin, crop raisers, preparing bulletin, crop raisers, vegetable growers, fruit growers, cattle breeders, poultry farmers, scientist, students, youth, farm women etc. Be empathized with readers i.e. putting yourself in the reader's place. Readers' educational, social &economic level, their interests, needs, problems, attitudes & beliefs should be identified & kept in mind. A bulletin that has been planned for one section of reader may not appeal to a reader in another group.

Where? Where do the intended readers live? Where will they use the bulletins? Rural areas, urban areas, worldwide continental, in school, at home, in the library, regional national, provincial, local, in the Held, in the office, in a entrepreneur etc.

What? About what bulletin is to be published choose the idea with care. Think what they already know about it. Mark the boundaries of topic & confine yourself to it. Be sure of your facts.

How? How do write? Your outline for writing facts, think thoroughly, how you are going to package your facts, how are you are going to present them. First make a rough outline of facts listed.

Writing a bulletin

After preparing a writing plan you should start putting down your ideas putting down your ideas on a paper. For effective preparation of bulletin, the following points have to be considered: -

I. Use direct style in writing. It should be simple, direct, clear and convincing without fine writing.

II. Choose words as you would your friends, select words & use them in proper relationship. Use concrete words, as concrete words always makes meaning clear. Use familiar words with positive meanings.

III. Sentence pattern should vary and sentence length on an average should be about 17-19 words. Make sentences light. Be clear, precise & definite. Make sure you say what you have in mind. Check & recheck. Mention important information in first part of your sentences. Use positive sentences.

IV. Have good 'eye appeal' Bulletin should be attractive to see.

V. Break up the text by using short paragraphs. Subheads to the paragraphs may be given

VI. Have suitable & good pictures depicting action. Have proportion & balance in size - Pen sketches & photos

are to be preferred over graphs & tables in popular extension bulletins.

VII. Write your own cut lines i.e. writing that explains photographs, sketches etc.

VIII. By your Cover people know you Make an appealing cover Colour, symbol, illustration should be appropriate to the subject discussed.

IX. Defend your title. Title of bulletin should be given much thought It should be concise & provocative.

X. Be brief, when a bulletin is short no summary is necessary. When it is long, index on table of contents & summary are needed.

XI. Have a number of sub heads.

XII. Use colour for attractiveness.

XIII. Figure it out for yourself. Bulletins are printed in page multiples of 4 (4,8, 1 2, 1 6 etc.) Decide on number of pages.

XIV. Use suitable type of lettering. The Chief function of type is to convey ideas & thoughts. It is achieved when it is read easily .10 or1 2 points type may be suitable for extension bulletin.

XV. Prepare a dummy.

XVI. Better to prints bulletins on art paper for longer use though more expensive than offset paper. Art paper appears neater, and type photographs are more clearly reproduced.

WALL NEWSPAPER

A wall newspaper is printed on only one side and displayed on walls or similar backgrounds for the benefit of the farmers as an information centre. The wall newspaper is a single large sheet of paper on one side of which printed material is provided and other side is for pasting on a wall or some other flat surface in any prominent and convenient place in the village. Wall newspaper is a sort of newspaper displayed at the common and prominent places periodically i.e. weekly or once in a fortnight. Wall newspaper provides news of the local community, which is of immediate interest to the readers.

Advantages

- Develops interest among the people.
- Highlights the current activities.
- Motivates the farmers to action.
- Draws attention to important events.
- Works as reminder.
- Provide information timely and periodically.
- It eminently suits to encourage all three aspects in the life of rural population i.e. development, participation and communication.

Preparing the wall newspaper

1. Paper should be thick and economical.
2. The size of wall newspaper depends upon size of paper. It can be 30 X 40 inches or 23 X 30 inches.
3. Letters should be bold and large so that it may be read easily from a distance.
4. Use simple language, simple words and short sentences.
5. Select a suitable title for the wall newspaper.
6. The contents should be of common interest.

Precaution

1. Select the prominent place where it can be displayed and read by more people.
2. Display in well lighted and at convenient height.
3. Protect from sun, wind and rain when displayed outside.
4. Put up timely in its usual place.

FARM FEATURES

A feature is a creative, something subjective, designed primarily to entertain and to inform readers about an event, a situation or an aspect of eye. Feature as a distinct and prominent article in a newspaper or magazine on a topic of current interest, a detailed presentation of some interesting subject, exploration of facts, goes beyond the facts by carrying associated ideas. Feature is an interesting and entertaining piece of writing on any current issue.

It is the Soil of newspapers, feature is a copy of Heart, while article is copy of Mind. So a feature has a bit of literary tone mixed with humour and creativity but still it is not a fiction, rather it is a factual imagination

Types of Features

a) People's profile, (who made news).
b) Explain events (that moved or shock the world).
c) Analyse (what is happening in the world/ society).
d) Suggest better way to live in (in a complicated world).
e) Teach an audience (How to do something).

We can divide all features published in farm media into following sub categories:

a) Personality features. (Successful/Progressive farmer)
b) Human-interest features. (Success stories of farmers)
c) Trends stories. (Latest trends of economic benefits in agriculture)
d) In depth stories. (Reason behind success/ failure of a farmer crop/pattern etc.)
e) Back-grounder stories
f) Explanation stories.

What ever may be topic of your news feature, but in order to involve reader's interest and emotions, a feature story 'content' must appeals to five senses: Touch, taste, smell, sound and sight. Rather than content, human-interest appeal, you are giving to your farm article is more important i.e. How is important than what

Structure of a Feature

There is not any fixed structure of a feature. If we follow any fix structure/format its creativity will gone out and the writing become dull. People advocate 'Pyramid Structure' of a feature, i.e. Intro with mass appeal at top followed by explanations of intro/facts in body part. i.e. From general (Lead/Intro) to specific (detailed creative body writing) approach is followed.

Writing of a Feature

These are two ways to get your news feature get written:

a) With a media man/reporter: If you select to work with a reporter, try to choose one who knows your organization and who has worked with you previous. If he/she agrees to write the story, send your idea

written in outline or descriptive form along with an attached note that you will be in touch to him/her to discuss the story idea. While discussing emphasize important points or to explore with reporter other directions in which the feature might be directed. There is a great incentive in this method of writing. As if reporter agrees to write the story. It means he/she has cleared it with editor. But using this method however also means that the story will have limited circulation, it will run into reporter publication only.

b) Doing it yourself: Your second option is writing it yourself. You write it and submit it. Although it might not have touch of reporter article story, but it reaches to more number of people. Now while writing feature, be aware that there is no set steps for writing a good feature. There are no rules, as there are for thrilling news. There are no writing cookbooks that can tell you precisely how many quotes and how many anecdotes one must blend on. Some tips to do it yourself are:

1) Write in a conversational style so that your writing doesn't sound so much like somebody just sit-down at a type writer/computer, but someone is talking with you as like your best friend.

2) Keep in mind following important tips of writing good feature

i. Feature news is not written in inverted pyramid format. Because a feature plays with the human interest and emotion, as such more from general to specific approach need to be followed.

ii. The five W's lead gives way to an opening (intro) in some way that will catch the reader's attention.

i i i . In feature writing use first person (I) approach, however, you must still remain as objective as possible.

iv. Features lead follows no set pattern. You can begin your feature with any of these:

- An eye catching quote.
- An anecdote.
- An arresting short sentence.
- A pure descriptor, a word picture.
- A question.
- or a straight news story.

v. Feature writing is similar in many way to fiction writing, with a strong opening that catches the reader's attention and interest, and build to a strong often surprise close or with a question/climax or suggestion.

vi. The first responsibility of feature is to provide facts. Jam pack it with facts but adorn them, dress them up, make them appearing and attractive. Make the facts come to life with the real experience of real people.

vii. While writing feature keeps theme/central idea in mind. Never cross the main road of your story.

viii. Provide vital background information. A paragraph or two must be placed high in the story.

ix. There should be connectivity in paragraphs of feature. Connect paragraph with transitional words paraphrases, etc.

x. Use dialogue whenever and wherever possible dialogues will keep a story moving.

xi. Never use authoritative language. As usually feature writer are written by young and non-specialized people,

xii. Smaller is great.

Formulation of a Feature

The overall formulation of feature includes the following steps:

1. Selection of topic/subject.

2. Collection of material.
3. Visiting the concerned places.
4. Conducting interviews.
5. Drawing blue print or skeleton
6. Conceptualizing the lead/intro.
7. Deciding the title & sub title.
8. Revision and physical appearance.
9. Selecting illustration.

In brief- Agricultural stories may be monotonous and dull/boring for writer, but with his heart in writing and creativity skills he/she can make these dull stop, into catch/interesting feature. And always keep in mind P & F i.e. people and fact.

FARM ARTICLES

Article is a glorified dignified and advance form of an essay. It is written on burning and timely topical issues in a journalistic manner.

a) By Journalistic manner means writing which include news + views+ facts + analysis. But in article writing, maximum emphasis is on the facts, presented in simple and understandable manner.
b) It is different from literature. Literature is like cold coffee and article is like hot coffee or you may say specific form of an essay.
c) Article means published on editorial page i.e. 'writing of mind' while feature means published on Sunday magazines/ entertainment pages i.e. 'writing of heart'. Article writing is comparatively easier than feature writing.

Writing of Farm Article

Writing of farm article is not just putting your thoughts or making bold statements on the paper. Your purpose of writing a farm article is to:

a) Communicate in such a manner that you attract attention of your readers (farmers)
b) Create interest in what you are going to say.
c) Making them understand and remember and finally help them to take the decision to act.
d) To achieve all these purpose, your article must answer all the 5Ws and one H in a specific manner. These are:

The 'Why' Of Writing: You write to communicate your ideas, messages and emotions. When you sit down to work, you must know -why you want to write about a particular subject?

- Is it only to inform farmers about something they do not know? Or It is to explain and give more information about something they already know?
- Is it to tell them, how to solve a particular farm or home problem?
- Is it to persuade them to adopt a new idea or method?
- Is it to show them a new aspect of an old idea?
- Is it to provide them with all the information they need, to take up some action?
- Unless you have such a definite purpose in writing, your writing will not be clear and it will be ineffective. You will only be wasting your time as well as the readers'.

The 'Who' of Writing: Your readers are the farm people. You must know more about them than just that like

- You will write best if you imagine that your writing is addressed to one person, not a group of people. You must, therefore, know who that person is and try to know him well.
- Your writing must create interest in him. After all he is a human first and a farmer next. Without securing his interest you cannot communicate anything to him.
- Try to put yourself in his place and see through his eyes. Of course, most individuals, in whatever ways they may differ, have something in common- common problems, desires and aims. So they all want that they and their families be benefited from the information you give.
- So you will have to make sure that the ideas you want to write about are sound, suitable and beneficial for them.
- Your ideas touch the farmers' ideas. In other words, if you know what they want to read, you start thinking for them and start a happy relationship with them. This will also help you in adopting the subject to suit their needs.
- The ideal way of knowing 'WHO' of your writing is to meet and talk to a typical farmer or housewife. If you keep your eyes and ears focused on them and observe what they are saying, you will easily come to know what they want.

The 'What' of Writing: You have to select such subject, as your readers are vitally interested in. While selecting a topic for writing make sure that the idea you have in mind is sound, suitable for your farmers/ audience and useful to most of them.Choose your topic carefully:

- Let it be topical/timely
- Let it introduce new facts to farmers. If facts are not new, take up a new point of view in dealing with old facts.
- Select the topic, which creates interest in them
- After selecting topic, think more about it.
- What do they already know?
- What will be the probable difficulties and problems, likely to come across during writing?
- How can the subject be tackled, so that they accept the idea?
- Mark the boundaries of subject and strictly confine yourself to these boundaries?
- See how much of the subject your readers can take without getting tired of it. Give only, as much as can be easily digested.

An over dose of even a good medicine can be very upsetting, if not fatal.

- ✓ Give one single series of related thoughts at a time.
- ✓ Leave out what they already know.
- ✓ Leave out what they can add for themselves. And leave out what they need not to know.

The 'Where' of Writing: There are various media available in current media scenario where you can publish your article. The newspapers, as media are always welcomed there. With some more details it can even be made suitable for periodicals like weekly and monthly magazines. You can publish your article for weekend edition of a daily newspaper or a monthly magazine. You can publish it in leaflets and bulletins, where you can make more detailed information available on the subject to the farm reader. You can publish in report and resume of farm organizations. You can publish circular letter, brief notes, of course to bring important facts to the notice of farmers and home makers.

The 'When' of Writing: Information communication has to be timely if farm readers are to make use of it. You have to write far in advance of the actual time or season when the information can be best used. Hence, your writing must be timely. If any information however, interesting or useful it may be interesting by adding background of news story (adding your view point). It may include follow up stories, success stories of farmers etc.

The 'How' Of Writing: Farm readers want a writing that lives. They like not only to see your ideas, but get the feeling of hearing them, smelling them and touching them too. It gives them sense of reality and humanness. Such writing will give them enjoyment and education. So farm writing must be:

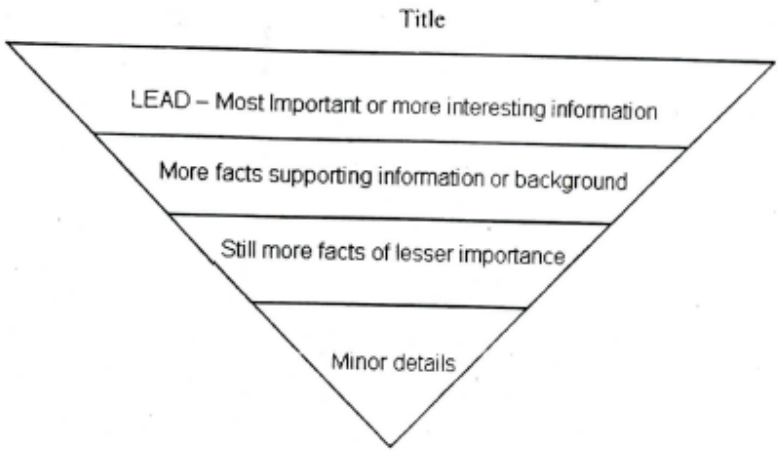
- Simple and clear to the readers.
- Sense of personal touch i.e. writing makes them feel that - "It is meant for us". Lack of variety and failure to appreciate their point of view make article drab and ineffective to farmers.
- Be Brief in your writing but never omit any Important information.
- Make your article specific. (Generalization is always vague).
- Never add halfhearted or halting recommendations.
- Address to the reader (farmer). A direct approach to the readers creates friendship between writer and reader.
- Be accurate in content of your writing.
- Your writing must be based upon facts and not on your personal feelings.
- Be accurate in giving names of people, places and products to help readers identify them easily.
- Sound convincing viz. quote sources and authority for your statement.
- Don't talk down to the readers. No one like a superior attitude avoid using 'should' 'ought to' 'need to' must' etc.
- Be practical in your information, as information of academic interest are of no value to farmers. He wants something that can put into practical.
- Avoid exaggeration at all cost.
- Even articles can be made interesting using techniques like introducing the human elements, giving personal touch etc.
- In brief while writing article, keep in mind the Target audience i.e. farmers their needs and demands.

If an article is like many roomed mansion with several stores, a feature is like a neat little beautiful one room cottage.

NEWS STORY

Different kinds of writing follow different forms or say each kind of writing follows a certain pattern or a particular form. So is the case with the news writing? The form in which an event is reported is called news story. The average news story has a treasury of shiny new facts to impart. The reporter starts news with a data line, which gives the name of place where the event took place or is reported. When the facts are collected, arrange and write them in order of their importance. Then most important or interesting fact are picked for the lead point. The most interesting part of the story, the most unusual, the most striking fact or the facts, which are most rewarding to the reader, or climax of the story', comes first. The remaining facts are represented in the body in descending order of importance. The structure of news story is commonly represented in the form of inverted pyramid.

Pyramid Structure of News Writing



Advantages of inverted pyramid concept of writing news story: The LEAD is able to catch the reader's interest and helps him to decide whether the news is of interest to him and go through the entire story. When the reader is in hurry, he does not go through the whole stop, and reads only the summary or the most important fact of the story. It is advantageous to the editor also because when there is shortage of space for printing, he may cut down the later part of the story or the information having lesser significance.

News Value: Four main factors determine the value of the news. These are:

1. Timeliness: The reader wants the news to be new that is why he buys a paper or listens to the broadcast. The miracle of present day communication frequently makes the announcement of the news almost coincide with the instant of its happening.

2. Proximity: - The reader finds more interest in a minor event which is more close to him than a more important event miles away . For example a small event may be more important than a flood in China. Surveys show that news of international importance, except major events is of interest to only ten percent of readers in large communities and to so small a proportion of readers in the small cities that no percentage figures have been worked out.

3. Size: - The very small & the very large attract the attention. We find interest in minuteness as well as in magnitude - but chiefly in magnitude. Accordingly when we hear of an accident we ask for the number of lives lost to the extent of the damage done.

4. Importance: - Is the news reported important or in any way significant? We might naturally think that this factor should head our list. The editors know that they cannot satisfy everyone. The better papers & the better newscasts seek to give news that holds significance and importance in its proper place and treatment.

Elements of the News Story

A news story usually consists of three parts; the headline, the first paragraph and the remainder.

1. Headline:- Headline is the first to attract the reader. Giving appropriate headline is an an in itself. Choosing the length and size of headline is to make first choice as to its importance and relevance. The headline's message is terse, abrupt and often striking. The whole idea is to make the reader stop and look. The headline seeks to hold the attention and compel or invite the reader to read the story.

2. The first Paragraph or Introduction:-It is called lead because it leads the rest of story. This is the first two or three paragraphs that introduce the story and tells in a nutshell what it is all about. It is also known as

Introduction because it introduces the rest to the reader. If the lead or introduction is not sufficiently arresting the interest will lag and the reader's eye may be attracted to other headline and another story. The lead is of different types, among them summary lead is most commonly used which usually tells in less than 35 words about the gist of the story. Convention requires that in the lead the reporter must answer the five W's and one H that are who, what, when, where, why and how.

In other words the lead has to explain who is the subject of action; what happened, when and where it happened and if possible why and how.

The following general points should be kept in mind while writing a LEAD or the introduction of the story.

- The introduction should be appropriate for the story.
- The introduction should make the reader to read the rest of the story.

The introduction should be kept shorter whenever possible; The introduction should normally be based on the key point of the story. "Spill the whole story in the first paragraph and maintain the interest for the rest of the story."

3. The remainder:

After having written the introduction, the next step is to write the story. As main points of the story have already been given in first paragraph, the remainder of the story should be placed in a natural sequence. It is as if you have taken the reader by his hand and led him step by step to the finale.

Points to be taken care of in writing a News Story

Every person has his own style of writing. But all writings comprise of words, sentences and paragraphs. So to adopt a good style in writing, the writer must know how to combine these three to make an impression, on the reader and create interest among them so as to make it readable one.

Word:-Words are the tools with which the writer has to work. The writer has to know something about the readers' nature & his experience. The writer should use: -

- Short and simple words
- Familiar, concrete words to make every word to work and intimate phrase.
- Write for specific work & write with one viewpoint.
- Technical words should be avoided or if used, the explanation must follow soon after.

Sentence: - Try to make frequent use of short sentences. Each sentence should contain one idea and should be in logical order. The readability of sentences is reported to be as follows:

Readability standards

Average Sentence length	Readability
8 words or less	Very easy to read
11 words	Easy to read
14 words	Fairly easy to read
17 words	Standard
21 words	Fairly difficult to read
25 words	Difficult to read
29 words	Very difficult to read

Keeping in view the readability as mentioned above, the sentences should be short as far as it is possible in order to increase its readability.

Paragraph

The writer must try to use short and simple paragraphs. Use the paragraphs for action, impact and end results. Short paragraphs give pauses to the readers and make the writing more attractive.

Fine-tuning: Every writer wants his news story to be clear. For this he fine-tunes the story by focusing the message.

Clarity: A writer is a projection of none's mind, and the key to writing clearly is thinking clearly. Let each word and each sentence of writer, communicate which is the hall mark of efficient communication.

Focus: A news story must be so constructed that it stands out like an architectural marvel flawless in its logic, beautiful in its composition, sound in its ethical standards etc. There must be a fine blend of logic between first paragraph and second paragraph ,between 2nd paragraph and the third and so on; between 1st sentence and the 2nd sentence, between 2nd sentence and the third and so on. This is the secret of good reporting. Build the story on the theme which is the central idea and the story, will emerge with sharp focus.

Script Writing for broadcast media

"Script writing is just as much a craft as interviewing, tape editing and mixing. The script is what makes sense of the information you have gathered. It is the framework for your story. It brings together the most important elements, and helps your audience understand the significance of the points the people you have interviewed have made. Scripts are used to ensure include all the relevant information and don't go off subject. Scripts are also important for timing, and help to make sure programmes don't overrun or under run. – Writing a radio script is different to writing a script for TV because the audience will be focusing purely on the audio and will have no visual cues. This has to be taken into account when choosing language and structure. *For example a radio script couldn't contain the line "Look at that!" without also describing what the person is looking at***.**

A video script may be defined as the pre-visualized description of the visual and aural elements of a video programme. Script writing involves the writing out of complete video programme in a suitable from. A video script enables each member of a production unit to understand the requirements of a video programme so that each unit member gives off ones best for achieving the overall objective of the programme. It also helps in sequencing and time management of the various segments of the subject matter and one will have a clear idea of the total content of the information when it is put down on paper.

Writing for radio

Radio can be a news report, a commentary, a conversation, an audio postcard, a documentary or a combination of all these and more. Regardless of the format, radio journalism is like storytelling - it is conversational in style. Radio scripting is a tool that will help you tell your story. Live radio is stressful enough without the added burden of having to decide what to say next. It is much better to write your announcements beforehand. You can then focus entirely on your delivery. Reading material well on-air is not easy. However, with rehearsal and confidence things will gradually fall into place. When you become proficient, you can replace complete scripts with dot-points for ad-libbing. But if in doubt, script it. It is far better to say something worthwhile, albeit a little stiffly, than "uumming" and "ahhhing" throughout your program. Writing scripts will take you longer to prepare for your show but developing loyal listeners makes it worth it! Think of your script as a way of writing on paper what you hear and see in your imagination. It can be used as a guide for live and pre-produced programming. Your script will be a guide for the host or narrator of an audio piece and/or for the on-air technician or technical producer who will be mixing your script to tape.

Basic principles

Language, grammar and punctuation

There is a big difference between radio and print or television stories. Since we can't go back to read the story over like a newspaper, and we don't have the visual images of TV, the radio journalist has to write so that listeners can understand the story the first time it is read. Below are some basic principles on writing for radio concerning language, grammar/punctuation and script layout.

Write as you speak, in simple sentences. Formal grammar and syntax are inappropriate for the conversational style of radio announcing. ***Avoid highly specialised terms, unless they are explained.***

No: "The allochthonous population of Brussels is gradually outnumbering the autochthonous inhabitants."

Yes: "There are more and more people from different ethnic backgrounds in Brussels."

Test your script as you write. Don't just run your eyes over it, or murmur under your breath. Read it out loud. If you trip over a word or phrase, it needs changing *before* show time. This will make it much easier on you *and* your audience.

Use precise, clear language. The text should unfold in a logical manner and be easy to follow by ear. If you are not sure about a sentence or paragraph, read it out to somebody and see whether they understand.

No: The other day, the police confirmed the suspicion of the family of racial motives in the well-known case of the murder of the old woman."

Write for one listener. Write and deliver your words as though you are speaking to one person, not a crowd. Treat your listener as an individual and you'll build a loyal audience.

No: "As you all surely know, March 21 is the International Day Against Racial Discrimination. So if any of you people are interested, you can attend free training courses at our radio on that day."

Yes: "March 21 is the International Day Against Racial Discrimination. If you are interested in attending a free training course, come to the radio station on that day."

Write news thoughtfully. News or documentary material should be delivered slowly, and in small chunks. News is information-heavy, and more difficult to digest. Give your listeners time to chew it over.

Think for the listener rather than yourself! Assess your script from the position of a listener.

Avoid abstractions. Show, don't tell. Be concrete and talk in pictures and images. It may sound funny, but radio can be a very visual medium. You have to give listeners something to "look" at... with their imagination instead of their eyes.

Don't overload your text with too much information.

No: "Between February and June 2000, there was a 21.53% increase in the deportation rate. From July until September, this escalated to 34.6%, states the recently published report by…".

Yes: "The recently published report by...reveals out a drastic increase of over 30% in the deportation rate in the year 2000".

Simplify or round numbers. Say "nearly 16 million" instead of the actual figure of "15 870 222". Using comparisons can be helpful. For instance, a local city of comparable size when mentioning the size of a foreign city.

Avoid repetitions, overused words and tongue twisters.

Expand and elaborate on a point that may not immediately have been conveyed. For instance, don't assume that everyone knows who Fidel Castro is.

No abbreviations should be used if you can avoid them, unless you know that they are very well known. If you can't help avoid them, mention the name in full in the beginning and keep reminding the listener. You cannot re-wind a radio programme and listen to a detail missed out.

Yes: "The World Association of Community Radio Broadcasters, better known by the French acronym AMARC, that's l'Association mondiale des radiodiffuseurs communautaires..."

Use brackets and quotation marks as little as possible because they are not audible.

No: "The mention of 'colour' is unnecessary in most crime stories, but this is (nearly always) ignored by even the most 'progressive' newspapers."

The chairman said: "It is a crying shame." Or The chairman said, quote: It is a crying shame - unquote.

Yes: The chairman said it was a crying shame.

Adjectives and personal values should be avoided in news writing. If you want to give your opinion, do it through a personality you quote.

No: "The mayor's remarks on the new legislation are a setback to local efforts."

Yes: "The Citizens' Collective of Lyon condemned the mayor's remarks on the new legislation, describing them as a setback to local efforts."

Avoid using pronouns such as he, her, they etc. The writer knows who they are referring to, but this may not be so clear for the listener. It is better to repeat than assume.

Avoid lists. You may end up losing the listener's interest.

Write short sentences using the "active" voice.

No: "The world's fastest growing criminal business is considered to be people trafficking."

Yes: " People trafficking is the world's fastest growing criminal business."

Use the present tense where possible.

Punctuate to suit your own reading style.

Yes: "Children learn to build musical instruments using scrap material like toilet paper rolls or popcorn seeds."

Yes: "Children learn to build musical instruments using scrap material**,** like toilet paper rolls or popcorn seeds."

Titles go before names.

Yes: "Minister of Labour, Maurizio Sacconi."; "Musician, Youssou N'Dour."

KISS (Keep it short and simple): You should not try to get too much information into any sentence. Although you use the inverted pyramid style of story writing, you may only be able to use one or two concepts (ideas) per sentence. You cannot get as much detail into a radio or television story as you can into a newspaper story.

You cannot expect your listener to understand the **Who? What? Where? When? Why?** And **How?** of a story all in the first paragraph or even the first two paragraphs. Although as a good journalist you should not leave any essential questions unanswered, you may find that it takes all the time available for a single story to communicate only a few basic facts. It is often said that you could put all the words in a ten minute radio bulletin on one page of a newspaper.

Stick to one or two key points per sentence. No sentence should be longer than 20 words, except in unusual circumstances. Just as a mother feeds a child one spoonful at a time, allowing the child to swallow each spoonful before taking the next, you should spoon feed your listener. Give them one piece of information at a time so that it can be digested before the next piece.

Where necessary, split a long and involved sentence into two or more shorter clearer sentences, as you would in conversation.

No- Japanese fishing boats, which were banned from Fijian waters during an international row over net sizes last year, returned to fish in the waters off Vanua Levu on Monday

Yes-Japanese boats have returned to fish in Fijian waters. They were banned last year because of an international row over net sizes. Now they are back in the waters off Vanua Levu.

It may take more words, but what good is the most skillful sentence in history if the listener cannot understand it? It might help you to write short and simple sentences if you first try to imagine how the story might appear in a newspaper headline. Once you have reduced it to the bones of a headline, you can put some

flesh on it for radio and television. Don't forget though that, whereas newspaper headlines can be incomplete sentences, without words like *the* and *a*, radio and television news must be in complete sentences. Look at the following example and notice how we take the details in the information, strip it down to the bones by writing a headline, then add words to turn the headline into a complete sentence, suitable for radio or television.

INFORMATION: *A contract for the construction of a new road between Madang and Lae has been awarded to a Korean company.*

HEADLINE: Koreans to build new road

INTRO: A Korean company is to build a new road between Madang and Lae.

Key principles for radio script writing

1. It is spoken

WE should remember that we are not writing a piece of written literature. So we should be natural and use the words you know the meaning and which are in your spoken vocabulary. Use the spoken words of everyday speech. Do not be afraid to use the same words twice or thrice if it the right word. The broadcast style must be natural. Example: Do not write like: The Road is not motorable INSTEAD WRITE LIKE; The Road is blocked or closed.

In Broadcast scripts, do not use abbreviations. Write full words.

We cannot write Like: Don't, That's, they're, won't, isn't INSTEAD WRITE AS:

Do not, That is, They are, Would not, Is not, etc.

2. It is immediate:

Broadcast scripts are considered to be written in immediate format. For Radio and Television, information is considered immediate. Broadcast is a "NOW" medium. But in print we can publish even history or something which is not immediate.

Example: Do not write: The Chief Executive said today the country's economy was

booming. INSTEAD WRITE LIKE: The chief executive says the country's economy is booming.

3. It is person to person

Writing for Radio and Television must be informal. It is like YOU AND ME medium. It mean that if you write a script to be transmitted through radio or television, you are supposed to deliver this script in person to person format. Though, at a time thousands of people would be listening or watching your scripts to be delivered from radio or television, but they should feel that they are attached to this script or drama or any information.

These scripts develop friendship with listeners and viewers. When we broadcast any script, we should adopt a friendly tone. Use language normally your audience use to speak and understand.

3. It is heard once

When we write a script for Radio and Television, we should keep in mind that the words, dialogue spoken are heard once and they can not be referred back as in case of print media. In the print media, we can again read the words we do not understand or miss them. But when words are spoken at radio and television, they can be heard again, if slipped first time. So, always use easy, simple short sentence and understandable language and words. Clarity must be observed. In broadcast script writing the biggest enemy is confusion. Do not write confused words. Leave out superfluous information. The idea must be grasped. Use only one idea in one sentence.

4. It is sound/picture

You should know that your scripts are delivered through sound in case of radio and sound and picture in case of television. Your words are a bridge between you and your audience. Do not use vague or ambiguous language in script writing. Punctuation is absolutely vital. When eyes see a mark on page, the brain reacts in a certain way and the sentences, dialogues are delivered in a right way. Always your first sentence should be catchy and attractive.

Writing Radio Script

There are probably as many methods of writing as there are writers. Each author has his or her own process for developing and writing a script. So much is involved in writing a good script that it would be impossible to write it down in a page or two. If you have never written a script, here is a brief description of one process. If you are an old hand at writing scripts, use what works for you.

1. Develop a concept. The concept is the story told in its most concise form revealing only essential details.

a. Construct a clear, well defined concept before developing the plot. While writing, it is easy to lose your direction and become lost in a maze of complications. Keeping the concept in mind, keeps the writer on track. The concept is the idea that holds the story together. It is the thing that keeps the script focused, providing a direction for the plot. b. A concept should identify the following:

(1) Setting ..... (Where? When?)

(2) At least the main characters ..... (Who?)

(3) A conflict or problem that the characters must resolve ..... (What?)

(4) The resolution of the conflict ..... (How?)

2. Write a summary of the story. This is a more detailed telling of the story in narrative form.

3. Divide the summary into scenes. Make a list of the scenes.

4. Describe the scenes that tell the story.. For each scene, answer the following questions:

a. What does the setting look like?

b. Where is the setting?

c. Specify the date and time.

d. Who are the characters in this scene?

e. What information does the scene communicate to the audience?

f. Identify the point in the story where CONFLICT arises. CONFLICT should arise early in the play.

g. Identify the point in the story where the CLIMAX and RESOLUTION occurs. Both of these may occur in one scene. CLIMAX and RESOLUTION should occur near the end of the play.

5. Write the dialog for each scene. Make the story happen. Refer to the information you wrote when you described the scene. You may find that inserting some of the sound effects at this time is automatic. Don't worry about getting all of them or even getting them into the correct format; that can be done later. If a sound or an idea for music comes to you while you are writing the dialog scenes, just make a note and put brackets around it. You can come back later and make adjustments.

6. Insert the remaining sound effects, music, and transition details in the appropriate format.

8. Compile all dialog scenes into a rough draft.

9. Read through the script. Search for problems (illogical transitions, contradictions, mechanics, etc.), fixing

them as you go.

10. Make a final draft.

Script layout

Prepare your material so that the path between your eyes, brain and mouth remains clear. For instance:

- Write hard-to-pronounce words phonetically
- Write names or figures in full
- Use an easy-to-read font in a large size
- Double space all copy for easy reading
- Type on one side of the page only
- Use one inch margins
- Exaggerate where the paragraph begins by spacing
- Mark your copy to guide your delivery. Marking copy is important to ensure easy reading
- If you want a word emphasized, underline it. Also, put slash marks after the sentences where pauses are required.

The more complex your radio format, the more complex the audio **mix** – or melded segments, background sound and music – will be. To make it easier, you will need to write **cues** in your script to indicate transitions in an audio story, or when to bring **"in"** or fade **"out"** each **sound element:**

Actuality: an edited comment or expression meant to serve as a quote; usually recorded at the scene of an event.

Clip: Segment of audio, any length, played as a unit; usually the same as actuality; may be a phrase or sentence that becomes part of an actuality.

Segment: an edited interview or narrated story with actualities; it could also refer to a clip or actuality.

Ambience: a background sound usually recorded at the scene of an event. Ambience helps place your listener at the event as a participant or observer.

Narration: the story told by a host, announcer or presenter.

The final script of your piece can also be the **transcript** of your show, or a detailed rendition in writing of a recording.

Writing for television

Although most of the rules for broadcast writing (such as KISS) apply to both radio and television, there are a few additional factors to remember when writing for television.

Making television news is a more complicated process than producing radio news - which can often be done by one person. Television always involves several people, performing specialist tasks such as camera operating, scriptwriting, bulletin presenting, directing, studio managing, lighting and sound mixing. Television also involves two simultaneous methods of presenting information - sound and vision. Of the two, vision is usually the most effective in giving details quickly. For example, you could take several minutes to describe a crash scene which can be understood from a ten-second film segment. The words in television usually support the pictures, not the other way round. That is why television reporters usually write their scripts after they have edited the videotape (or film). You usually have to write your script so that the words match the pictures which are on the screen. This requires good language skills, especially in simplifying complex language. If a

newsreader has to read your script live - perhaps from an **autocue** - it will help them if you keep the words and grammar simple and the sentences short. (An autocue – also called a *teleprompter* - is a device which projects a magnified image of the script on a clear screen in front of the camera lens, in such a way that only the presenter can see it. It is invisible to the viewers at home. It is used so presenters do not need to keep looking down at their scripts.)

Of course, the words become more important when there are no pictures to illustrate the story, only the sight of the newsreader's head and shoulders. But you should always try to think of ways of presenting some of your information visually, otherwise you are wasting half of your resources (the vision). For example, if you are telling about a new tax on beer, you will probably simultaneously show pictures of a brewery and of beer being produced and consumed. You might also want to show a graph showing how beer sales and taxes have increased over the past few years. And you may want a clip of the relevant minister explaining why he is increasing the tax.

As well as being aware of how your words will support the pictures, you must also consider the effect the pictures will have on your viewers' ability to listen to the words. For example, if you have some very dramatic pictures of an explosion, you should not write your script in such a way that the important facts are given while viewers have all their attention on the picture. Perhaps leave a couple of seconds without any commentary during the explosion, then bring your viewers' attention back to the words gradually. Remember that every time you change the picture on the screen, your viewers' attention is distracted away from the words while they concentrate on the new image. Bear this in mind when writing your script to fit the edited pictures.

Because television viewers have to concentrate on both sight and sound, you cannot expect them to concentrate on lots of details while there are interesting pictures on the screen. So if you want to give some very important details, either do it when the camera returns to a picture of the newsreader, or do it through graphics such as maps, diagrams, graphs or tables or through captions.

Captions

The names and titles of speakers are usually written on the screen in captions. These must be simple and clear, so that your viewers do not have to spend much time reading them. Remember too that your viewers may not all be able to read. If you know that literacy rates are low among your audience, putting the written word on the screen will not alone explain essential details. For example, in countries with high literacy rates, television newsreaders or reporters use only captions to identify speakers. You may need to both present a caption and also read the name aloud.

Subtitles

Subtitles are text versions of the spoken words in the bulletin or program. They usually run along the bottom of the screen so viewers can read them while still watching the pictures and listening to the words being spoken. They are mainly used for two reasons: to assist viewers who have hearing difficulties (called *closed captions*) or to translate words in languages other than the language of broadcast. They generally need to be prepared beforehand and they require concentration from the viewer, so they should be done professionally if possible.

To avoid having to use subtitled translations of words spoken in another language, it is possible to over-dub what the speaker is saying by fading down the original sound and getting another voice to read a translation over it, either a fellow journalist or a professional voice actor. Simpler still is to fade down the words being spoken so they can barely be heard then the newsreader (or reporter) can summarise what is said in reported speech.

Stand-ups

One final word about writing for stand-ups. These are the times when a reporter speaks directly into the camera at the scene of the story. Each stand-up segment in news is normally about 10 or 20 seconds long, meaning that it can contain several sentences of spoken word. Some reporters write the words they will say in sentences on a notebook then read them out in front of the camera. However, this means that the reporter cannot look into the camera while also looking down to read from the notebook.

It is better either to memorise the sentences then put the notebook to one side or to remember only the key words you want to use then speak sentences directly into the camera. In both cases, it helps if you keep the language simple and your sentences short. You must also avoid using words which might be difficult to pronounce. If you try to say "The previous Prime Minister passed away in Papeete", you will get into difficulties because of all the "p" sounds. Rewrite the sentence as "The last Prime Minister died in Papeete."

It also helps in sequencing and time management of the various segments of the subject matter and one will have a clear idea of the total content of the information when it is put down on paper. A video script consists basically of two columns -

i) Video (picture) and (ii) Audio (sound). The video column describes the images appearing on the television screen. The audio column describes the type of sound coming out along with a particular image. Audio may include music, sound affects, commentary, dialogue etc. Video column will indicate the type of shots (long, medium and close up), angle of the camera (normal, high and low), movement of the camera, type of lighting and other effects etc.

The script may also have information about the duration of each shot or scene. This enables the working out of the total time for the programme and modifying the script, ifnecessary. Stages of script writing are :

i. Research
ii. Treatment
iii. Outline
iv. Sequencing
v. Special effects and animation
vi. Story board
vii. Review

For case of working, the video, script may be divided into the following column :

Scene/ Shot No.	Type of shot long/ medium / close up	Video	Audio	Duration

While preparing the script for a video lesson, following points must be kept in mind :

a) Lay down the objectives of the video lesson. The objectives can be shown at the beginning of the video lesson, if necessary.
b) Ensure that the video lesson does not exceed 15-16 minutes duration. If a topic is not fully covered in this time, the video lesson may be made into parts.
c) It is preferable to deal with a subject in small segments in depth, then to have a video lesson on a vast subject treated superficially.
d) Plan for a lot of visual elements. Remember that a learner is able to grasp better by seeing than by just

hearing. Remember also that video is primarily a visual medium.

e) Avoid long winded sentences. Remember that the visual and aural elements are complementary to each other. Hence, use simple sentences that convey meaning directly.

f) The audio text should also avoid the use of words like 'as follows', etc., 'foregoing' etc. They may appear all right in a written text but sound odd in a video programme.

Recording is the stage where all the visual and aural elements described in the script are collected. The recording process sometimes takes a lot of time as the recording may be spread over days, months or even seasons, and at various places. For preparing video lessons, two approaches are commonly used. One approach is to record the lesson in the instructor's voice, supported by visuals wherever required. Two or more instructors can also cover different aspects of the topic. In the other approach, the visual portions are recorded as per convenience, not necessarily in which it is written in the script. All these visual bits, called 'Shots', are rearranged during editing as per the original script. The commentary is recorded separately and this is dubbed in the video. This process is called the 'Voice-Over' commentary. A video lesson prepared with 'Voice-Over' commentary is more effective as these are visual dominated compared to the video lesson when the instructor is seen. Care should be exercised that the instructor's face is not shown for more than 15-20 per cent of the duration of the video lesson. It is also essential that the instructor has a personality that is 'presentable'.

The director/teacher must make an evaluation as to the suitability and effectiveness of each specific visual to be used. Guidelines that can help and which can be memorized as A-BC- D-E-F-G are aspect ratio. Area, Bleed, Contrast, Detail and Effect of Size, Feeling of Director and Glare. The shot is the basic visual element in a video programme production. A shot is a single and continuous image taken by a camera. It can be as short as 1/25th of a second (the length of the single video frame) or as long as the length of an entire programme. We generally assemble a number of different shots together into a sequence. Proper break down of shots, and appropriate selection of shot sizes can improve the quality of the video programme. Remember that a video screen is very small as compared to that of film and so it is not ideal to show people in very long shots (V.L.S.) and long shots (L.S.) for a very long time. It is a good idea to establish the scheme/location with a long shot for about 10 seconds and then cut to medium close ups (MCU), close ups (CU), and Big close ups (BCD) (stress on facial expressions) of the characters. Video, is after all a 'close up medium'.

Composition is the artistic and meaningful positioning of all the pictorial elements within the frame of the shot. It should be aesthetically pleasing to the eye-proper balance, proper use of line, mass, colour and movement and it should visually provide the dramatic emphasis, significant relationships, the mood and the meaning of the scene. An important function of composition is to focus the attention of the audience on the point of the shot where we desire emphasis.

Format of a Video Script (Story Board)

Shot Number	Time Segment	Video	Shot Description	Audio	
				Voice	Music

Working script

Scene/ Shot No.	Type of shot long/ medium / close up	Video	Audio	Duration

Format of a Video Script (Story Board)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