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MA EDUCATION

MAE 202: EDUCATIONAL RESEARCH

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CENTRE FOR DISTANCE AND ONLINE EDUCATION

UNIVERSITY OF SCIENCE & TECHNOLOGY MEGHALAYA

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MAE 202: EDUCATIONAL RESEARCH

Unit 1: Introduction to Educational research:

- Sources Acquiring Knowledge, Meaning, Steps and Scope of Educational Research
- Scientific Method, aims and characteristics of research as as Scientific activity
- Ethical considerations in Educational Research and Paradigms of Educational research
- Types of Research- Fundamental, Applied Research and Action Research

Unit 2: Major approaches to Educational Research:

- Meaning, definition, purpose and components of researchdesign.
- Difference between the terms research method and research methodology.
- Research proposal: Its meaning and need

A. Identification of research topic: sources and need
B. Review of related Literature
C. Rationale and need for the study
D. Definition of Terms
E. Variables
F. Research questions, objectives and hypotheses
G. Assumptions if any
H. Scope, limitations and delimitations
I. Method, sample and tools
J. Significance of study
K. Technique for data analysis
L. Bibliography
M. Time frame
N. Chapterisation

Research Design - Historical Research, Descriptive Research, Experimental Research and Ex-post facto research

Unit 3: Variables and Hypothesis

- Meaning and types of variables
- Concept and sources and types of hypothesis
- Formulating hypothesis and Characteristics of a good hypothesis
- Hypothesis testing and Errors in testing of hypothesis

Unit 4: Sampling, Data collection and Analysis of Data:

- Data collection and sources of data
- Tools and Techniques of data collection – Documentary, Observation, Questionnaire, Schedule, Interview, Rating Scale and Tests.
- Sample selection and methods in sampling – Probability and Non- Probability, Sample Size, sampling error and reduction of error.
- Qualitative and Quantitative analysis.

EDU 202 Educational Technology

Objectives: To enable the students to understand the concept and scope and objectives of Educational Technology.

1.1 Objectives

Course Outcomes:

CO1: The students understand the concept and scope and objectives of Educational Technology.

CO2: The students have learnt about teaching technology, behavioural technology and instructional technology and their application.

CO3: The students are able to understand about communication process, teaching aids, system approach and use of computer and internet in educational technology.

CO4: The students can develop effective skills for classroom communication.

CO5: The students are taught to analyse the different interaction activities in the classroom.

1.2 MeaningofEducationalTechnology
1.3 ScopeofEducationalTechnology
1.4 SignificanceofEducationalTechnology
1.5 Componentsof ET
1.5.1 Hardware
1.5.2 Software
1.6 EducationalTechnologyandInstructionalTechnology
1.7 Let usSumup
1.8 References

1.0 Introduction

This is the era of technology where we are utilizing scientific techniques for solving problemsand improving the life. However for acquiring education also we are implementing technology
tomaketeachinglearnigeasier,simple,andcomprehensive.Thistechnologyisknownaseducationaltechnologywhichis savingtime andenergyandassistinglearner progressively.

Asitisthefirstunitofcoursewearemakingthischaptercomprehensivetomakeyouunderstandthe meaning,scopem, significanceand components ofeducational technology

1.1 Objectives

Aftergoingthroughthisunit,youwillbeableto

- Defineeducational technology
- Explainthescopesandsignificanceofeducationaltechnology
- DifferentiateHardwareandsoftware
- Identifygardwareandsoftwareineducationaltechnology.
- DistinguishEducational TechnologyandInstructionaltechnology.

1.2 MeaningofEducationalTechnology

Education as a broad discipline that is responsible for changing behavior of individual withthe help of suitable method, strategies andtechniques of teaching and learning.From thetime of traditional Guru Sisyaparampra till date drastic changes have been observed in thisregard. In this modern era of 21st century of science and technology the complexprocess ofteaching learning has been modified and simplified by the use of educational technologywhich is nothing but application of modern technology in the field of educational process.Youcanunderstandthemeaningofeducationaltechnologybydividingitintotwowords –education‖ and –technology‖: Education is the processof acquiringand imparting cognitive, affective, psychomotor development on the part of the learner witha suitablestrategy.Education is a discipline which is both science and art. It is a mixture of science of learningand arty of teaching.However technology refers to the systematic application of scientificprinciples in terms of tools, machines and other expertise to achieve an objective which as aresult of use can design and create new devices that enriches human productivity as well asolves the problems. Hence technology is applied for human development and worked as aproblem solvinginventions.

EducationalTechnology

Technology refers to the techniques as also the technical contrivances. A systematic way ofapplying the techniques to achieve an objective is as important as the use of technical equipmentfor the same.As a matter of fact, techniques are reckoned as the software and the equipment asthe hardware oftechnology. Technology resultsin new designsand devices asalso new

ideasandprocesses.Eachnewphysicaldeviceisaccompaniedbyanewsetofproceduresandtechniques. Forexample,thedevelopmentoftelephonehasledtophonebooks,answering

machines, fax, telephone shopping, etc. the _hard' component (physical device) for the purposeofstudy.

Educate the act or process of acquiring and imparting knowledge is crucial to the development ofa learner with a view to his/her participation in the transformation of the world for a bettertomorrow.Learningandunderstandingarebasicto the definition ofeducation.

Educational technology is not a simple combination of these two words as shown in fig. its isusuallythought of evenmorethanthesum of the followingtwo interpretation;

1. Technologyin education

2. Technologyofeducation

Early developments referred to the role of technology in education which signifies the use ofaudiovisualequipment,i.e.,hardwareineducationalprocesses.Laterdevelopmentsrecognizethecon ceptoftechnology ofeducation,i.e.,techniquesandmethodologiesoftheteachinglearning process. This is indeed the software aspect of educational technology. The origin ofsoftwareiscloselyassociatedwiththecourseware,i.e.,instructionaldesignanddevelopmentofasubje ct.

Thus Educational technology is a science of techniques and methods by which educationalgoals can be realized. . It is helpful for preserving, transmitting and advancing the knowledgeutilizingsuitabletoolsandtechniquessuchascomputer,television,CDetc.Henceeducat ional technology utilizes several machines such as television, radio, tape recorder,video tapes with principles engineering and principles of physical sciences and behavioralscience forimprovingthe teachingandlearningprocess ofeducation.

Educationaltechnologydealswith

(i) analysisofinstructionaltasks/challengesand settingtheeducationalobjectives

(ii) selectionandconstructionofsuitablemachine,tools, instrument

(iii) selectionanduseofappropriatetechniquestorunthemachine/devicestoachievetheeducationa lobjective

(iv)Integration of scientific and technological skills/ techniques with appropriate behavioraloutcome

Therehavebeenseveraldefinitionsofeducationaltechnologydevelopedovertime.Letusgo through them toget thebetter understandingonthe term –educational Technology‖ .Educational technologyis the development, application and evaluationof systems, techniquesand aids to Improve human learning .(National Council for Educational Technology for theUnitedKingdom (NCET, 1967).

Itis the application of modern skills and techniques to the requirement of education andtraining.(Derik Unwin , 1969).

Educational technologyisan applicationof scientific knowledgeabout learning and conditionsof learning toimprovethe effectivenessandefficiency of teaching and learning.(Leith,1975)

RobertA.Cox

"EducationalTechnologyistheapplicationof scientificprocesstoman'slearningconditions."

JohnP.Dececco

"EducationalTechnologyistheformofdetailedapplicationofpsychologyoflearningtopracticalteachingproblems"

E.E.Hadden

"Educational Technology is that branch of educational theory and practice concerned primarilywiththedesign and useof messages whichcontrolthe learningprocess."

Richmond, "Educational Technology is concerned to provide appropriately designed learningsituations which, holding in view of objectivesof the Teaching of Training, being to bear thebestmeans of instruction."

S.S. Kulkarni, "Educational Technology may be defined as the application of the laws as well asrecentdiscoveries of scienceand technologyto theprocess of education."

S.K.Mitra,"EducationalTechnologycanbeconceivedasascienceoftechniquesandmethodsbywhicheducational goals could berealized."

Robert A. Cox Article The Process of Educational Technology: A Tool for Development 1970)."Theapplicationofscientificprocesstoman'slearningconditionsiswhathascomerecentlytobecalled'educational or instructional'technology."

D.E.S.WorkingParty(U.K.),"EducationalTechnologyisthedevelopment,applicationandevaluationof systems, techniques and aids inthe field ofhuman learning."

Robert M. Gangedefined Educational Technology as "The Development of asset of systematictechniquesandaccompanyingpracticalknowledgefordesigning,testingandoperatingscholsaseducational systems."

Educationaltechnologyistheeffectiveuseoftechnologicaltoolsinlearning.Asaconcept,itconcernsanarrayoftools,suchasmedia,machinesandnetworkinghardware,aswellasconsidering underlying theoretical perspectives for their effective application.(Richey 2008)Educationaltechnologyincludesnumeroustypesofmediathatdelivertext,audio,images,animation,andstreamingvideo,andincludestechnologyapplicationsandprocessessuchasaudioorvideotape,satelliteTV,CD-ROM,andcomputer-basedlearning,aswellaslocalintranet/extranetandweb-basedlearning.Informationandcommunicationsystems,whetherfree-standingorbasedoneitherlocalnetworksortheInternetinnetworkedlearning,underliemanye-learning processes.Tavangarian ,Leypold ,Nölting,Röser ,(2004)
Richey definededucationaltechnologyas"thestudyandethicalpracticeoffacilitatinglearningandimprovingperformancebycreating,usingandmanagingappropriatetechnologicalprocessesandresources".(Richey2008).TheAssociationforEducationalCommunications and Technology (AECT) denoted instructional technology as "the theoryand practice of design, development, utilization, management, and evaluation of processesandresourcesforlearning.[(RandyGarrisonandTerryAnderson2003).AccordingtoUNESCO,—Educationaltechnologyisacommunicationprocessresultingfromtheapplicationofthescientificmethodstothebehavioralscienceofteachingandlearning.This

communicationmayormaynotrequiretheuseofmediasuchastelevisionbroadcasts,radio,cassettse tc‖

1.3 ScopeofEducationalTechnology

Educational technology refers to the use of both physical hardware and educational theoretics. Itencompassesseveraldomains,includinglearningtheory,computer-basedtraining,onlinelearning, and, where mobile technologies are used, m-learning. Accordingly, there are severaldiscreteaspectstodescribingtheintellectualandtechnicaldevelopmentofeducationaltechnolo gy:

- educationaltechnologyas thetheoryand practice ofeducationalapproachestolearning
- educational technology as technological tools and media that assist in the communicationofknowledge,and its development and exchange
- educationaltechnologyforlearningmanagementsystems(LMS),suchastoolsforstudent and curriculum management, and education management information systems(EMIS)
- educationaltechnologyitselfasaneducationalsubject;suchcoursesmaybecalled"ComputerSt udies"or"Information and CommunicationTechnology(ICT)"

Henceeducationaltechnologyhelpstodeveloptheteaching,learning,testingandtrainingactivitiesi n terms ofachieving educationalgoals

1.4 SignificanceofEducationalTechnology

- *Access to variety of learning resources* : In the era of technology. ET aids plenty ofresourcestoenhancetheteachingskillsandlearningability.WiththehelpofETnowitis easy to provide audio visual education. The learning resources are being widens andwiden. Now with this vivid and vast technique as part of the ET curriculum, learners areencouraged to regard computers as tools to be used in all aspects of their studies. Inparticular, they need to make use of the new multimedia technologies to communicateideas,describeprojects, and order information intheir work.

- *Immediacy to information :*ET has provided immediacy to education. Now in the year ofcomputers and web networks the pace of imparting knowledge is very fast and one can beeducated anywhere at any time. New IT has often been introduced into well-establishedpatternsofworkingandlivingwithoutradicallyalteringthem.Forexample,thetradit ional office, with secretaries working at keyboards and notes being written on paperand manually exchanged, has remained remarkably stable, even if personal computershavereplaced typewriters.

- *Anytimelearning:*Nowintheyearofcomputersandwebnetworksthepaceofimparting knowledge is veryfast and one can be educated .One can study whenever hewills irrespective of whether it is day or night and irrespective of being in India or in USbecause of theboom in ET.

- *Collaborative learning* : Now ET has made it easy to study as well as teach in groups orin clusters. With online we can be unite together to do the desired task. Efficient postalsystems, the telephone (fixed and mobile), and various recording and playback systemsbased on computer technology all have a part to play in educational broadcasting in thenew millennium. The Internet and its Web sites are now familiar to many children indevelopedcountriesandamong educationaleliteselsewhere,butitremainsof littlesignificancetoverymanymore,who lack the most basic means forsubsistence.

- *Multimedia approach to education* : Audio-Visual Education, planning, preparation, anduse of devices and materials that involve sight, sound, or both, for educational purposes.Amongthedevicesusedarestillandmotionpictures,filmstrips,television,transparen cies, audiotapes, records, teaching machines, computers, and videodiscs. Thegrowth of audio-visual education has reflected developments in both technology andlearning theory. Studies in the psychology of learning suggest that the use of audio-visuals in education has several advantages. All learning is based on perception, theprocessbywhichthesensesgaininformationfromtheenvironment.Thehigherprocessesofm emoryandconceptformationcannotoccurwithoutpriorperception.People can attend to only a limited amount of information at a time; their selection andperceptionofinformationisinfluencedbypastexperiences.Researchershavefoundthat,

other conditions being equal, more information is taken in if it is received simultaneouslyin two modalities (vision and hearing, for example) rather than in a single modality.Furthermore, learning is enhanced when material is organized and that organization isevidenttothestudent.Thesefindingssuggestthevalueofaudio-visualsintheeducational process. They can facilitate perception of the most important features, can becarefullyorganized, andcanrequirethe studenttouse morethan onemodality.

- *Authentic and up to date information :*The information and data which are available onthe net is purely correct and up to date. Internet, a collection of computer networks thatoperate to common standards and enable the computers and the programs they run tocommunicatedirectlyprovides trueand correct information.

- *Onlinelibrary:*Internetssupportthousandsofdifferentkindsofoperationalandexperimental services one of which is online library. We can get plenty of data on thisonline library. As part of the IT curriculum, learners are encouraged to regard computersas tools to be used in all aspects of their studies. In particular, they need to make use ofthe new multimedia technologies to communicate ideas, describe projects, and orderinformationintheirwork.Thisrequiresthemtoselectthemediumbestsuitedtoconveying their message, to structure information in a hierarchical manner, and to linktogetherinformation to produceamultidimensional document.

- *Distance learning* : Distance Learning, method of learning at a distance rather than in aclassroom. Late 20th-century communications technologies, in their most recent phasesmultimedia and interactive, open up new possibilities, both individual and institutional,for an unprecedented expansion of home-based learning, much of it part-time. The termdistancelearningwascoinedwithinthecontextofacontinuingcommunicationsrevolution, largelyreplacingahithertoconfusingmixednomenclature—homestudy,independent study, external study, and, most common, though restricted in pedagogicmeans,correspondencestudy.Theconvergenceofincreaseddemandforaccesstoeducational facilities and innovative communications technology has been increasinglyexploitedinfaceofcriticismsthatdistancelearningisaninadequatesubstituteforlearningalongsideothersinformalinstitutions.Apowerfulincentivehasbeenreduced

costs per student. At the same time, students studying at home themselves save on traveltimeandothercosts.Whateverthereasoning,distancelearningwidensaccessforstudents unable for whatever reason (course availability, geographical remoteness, familycircumstances,individualdisability)tostudyalongsideothers.Atthesametime,itappeals to students who prefer learning at home. In addition, it appeals to organizers ofprofessional and business education, providing an incentive to rethink the most effectivewayof communicatingvital information.

- *Better accesses to children with disabilities* : Information technology has brought drasticchanges in the life of disabled children. ET provides various software and technique toeducatethesepoorpeoples.Unlessprovidedearlywithspecialtraining,peopleprofoundly deaf from birth are incapable of learning to speak. Deafness from birth causessevere sensory deprivation, which can seriously affect a person's intellectual capacity orability to learn. A child who sustains a hearing loss early in life may lack the languagestimulation experienced by children who can hear. The critical period for neurologicalplasticity is up to age seven. Failure of acoustic sensory input during this period results infailure of formation of synaptic connections and, possibly, an irremediable situation forthe child. A delay in learning language may cause a deaf child's academic progress to beslower than that of hearing children. The academic lag tends to be cumulative, so that adeaf adolescentmay befour or moreacademicyears behindhisor herhearing peers.Deaf children who receive early language stimulation through sign language, however,generallyachieve academicallyalongside theirhearingpeers.

The integration of information technology inteaching isa central matter in ensuring quality inthe educational system. There are two equally important reasons for integrating informationtechnology in teaching. Pupils must become familiar with the use of information technology,sincealljobsinthesocietyofthefuturewillbedependentonit,andinformationtechnologymu stbeusedin teachingin order to improveits qualityand makeit moreeffective.

SpecificSignificance

- accessto varietyof learningresources

- immediacyto information

- anytimelearning
- anywherelearning
- collaborativelearning
- multimediaapproachtoeducation
- authenticand upto dateinformation
- accesstoonlinelibraries
- teachingofdifferentsubjectsmadeinteresting
- educationaldatastorage
- distanceeducation
- accesstothe sourceofinformation
- multiplecommunicationchannels-e-mail,chat,forum,blogs,etc.
- accesstoopencourseware
- betteraccessestochildrenwithdisabilities
- reducestime on manyroutinetasks

1.5 ComponentsofET

The educational technology composed of mainly two components such as hardware andsoftware.Bothhardwareandsoftwareisequallyimportantforeffectiveapplicationofeducation altechnology.Forexampleaninteractivecomputerprogrammeisworthlesswithout suitable educational programme. Both hardware and software are complementary toeachother.

1.5.1 Hardware

Hardware denotes technology in education that involoves electronic devices based on scientificprinciples and techniques.Its origin is in Physical Sciences & Applied Engineering and it is basedontheconceptofService.ItadoptsaProduct-orientedApproach.Itisconcernedwiththeproduction and utilization of audio-visual aid material[such as charts, models, slides, filmstrips,audio cassettes, etc.], sophisticated instruments and gadgets[such as radio, television, films,projectors, tape-recorders, video player, teaching machines , computers, etc.] and mass media.Hardware Technology utilizes the products of Software Technology [such as teaching strategies,teachinglearningmaterial,etc.]foritsfunctioning.Hardwaretechnologyhasthepotentialto

hand over the educational benefits to the mass with greater ease and economy Too much use oftechnicalgadgetsmay mechanize the processof teaching-learning as the Hardware approachtriestoentereducationfromoutside,operatingmoreinisolationthanincombination.

1.5.2 Software

Software denotes technology of education which involves a systematic, scientific application ofappropriate scientific research both from physical science, social science such as psychology andsociology, philosophy, management studies etc.to solve educational problems.It is sometimesreferredtoasTeachingTechnology,InstructionalTechnology orBehaviorTechnology.Itsorigin is in BehavioralSciences and the applied aspects of Psychology of learning.It is aProcess-oriented Approach. It utilizes the knowledge of the Psychology of Learning to producelearning material, teaching – learning strategies, etc.[Software Technology] for the betterment ofthe process of teaching-learning It does not provide direct services to its users. Instead, it helpsin the production of various Software materials which are used for developing the hardwareappliances.It includes teaching strategies, learning material, evaluation tools, teaching models,programmed instruction, etc.Software technology does not require any aid form the hardwaretechnologyforitsdelivery.Itbecomesmoreusefulandproductivewhenassistedbytheware Technology. Software technology does not have mass appeal and is costlier in thelongrun,as compared to hardwaretechnology.

1.6 EducationalTechnologyandInstructionalTechnology

Thetermseducationaltechnologyandinstructionaltechnologymayseeminterchangeable,butthey infact haveimportant subtledifferences,whenunderstood canmakethe differences

toaneducator(s)planningandimplementationofinstruction.Theanalysisbetweeneducationaltechnologyand instruction technologyarein fact found at the roots of
Theirdefinitions.

Education is defined as the "activities and resources that support learning" (AECT, 2004,p.1). This refers to all activities and resources both planned and unplanned that contribute toa students' learning regardless of whether the learning is intentional or unintentional. On theother hand , instruction refers to " activites structured by someone other than the learner andoriented toward specific ends"(AECT, 2004,p.1). Instruction is part of the education as awholebutinstruction,unlikeeducation,iscarefullymappedoutineverydetail.

Educational technolgy isdefined as "the study and ethical practice of facilitating learningand improving performance by creating using,and managing, appropriate technologicalprocesses and resources" (AECT. 2004. p.3).The application of theory, technology, andpsychology to achieve the goal of education and enhance the learning of individualsisnothingbur educational technology.

Educationaltechnology

- Is responsibleforDevelopmentofteachingandlearning
- Applies theories of instruction, learning, behavioral and cognitive psychology toassessment,design, implementation,and evaluationof instructionalmaterial.
- Applies research, theory, technologies, and psychology to solve instructional andperformanceproblems.
- Theparticularapproachusedto achievetheendsofeducation.

Educationaltechnologist

- Designinstruction
- Produceinstructionalmaterials
- Manageinstructionalcomputingservicesorlearningresources collections.
- Applytheoriesofcognitionandresearchtoutilizetechnologyforthebenefitofthelearner.

InstructionalTechnologyisdefinedas"thetheoryandpracticeofdesign,development,utilization,management,andevaluationofprocessesandresourcesforlearning"(SeelsandRichey,1994, p.1).

Henceinstructionaltechnologyreferestotheuseoftechnologicalprocessesasatoolspecificallyforteachingandlearningwhichfacilitatesaccesstoinformationofalltypes.ItisabroadtermandDealswiththeprocessofusingtechnologyforinstruction.ItDescribesthetechnologiesthatfacilitateaccesstoinformationofalltypes.ItsfunctionsareAcquisition, processing,storage,anddisseminationofinformationinallofitsformsandEvaluation,management,andintegrationofinstructionwithtoolsavailable.Howeverinstructional

technologist(i)Identifyandanalyze problemsof instructionaldesign.(ii)Deviseandimplementsolutionsto those problems.(iii) Integrate people, procedures, ideas, and devices for the purpose ofprovidingtools which enhancethe learningprocess.

It would seem that Instructional and Educational Technology are synonymous.Thesimple definition for each makes the distinction of their difference: Instructional Technology isthetool. Educational technologyis theprocedure forusingthat tool.

ContrastthecharacteristicsofeducationaltechnologyandInstructionaltechnology

Educational	Instructional
Teachesabouttechnologyasacontentarea	Teaches withtechnology(usestechnology asatool)
Keywords:integrationandeducation	Keywords:learningenvironments,instructionalsystems andprocess
Shapecurriculumorsolveperformance	Focusmoreonthedevelopmentandcreatingofthelearning systemthatinvolvesometype oftechnology
PrimaryGoal:Technologicalliteracyforeveryone	PrimaryGoal:Toenhancethe teachingandlearningprocess
Concernedwiththebroadspectrumoftechnology(How humanshavedesignedandinnovatedthenaturalworld)	Primarily concerned with the narrow spectrum of informationandcommunicationtechnologies

1.7 Letus Sumup

In this unit you have learnt about the concept of educational technology with its scopes andsignificance.Youhavealsogotanideaabouthardwareandsoftwarecomponentsofeducationaltechnology.Tomakeeducationaluniversalizeinourcountryitisreallyneeded

thateducationaltechnologyshouldgrowproperlywithitsquality.Thisunithasalsodistinguisheded ucational technologyfrom instructionaltechnology.

1.8 References

AssociationforEducationalCommunicationsandTechnology.(2004).Themeaningofeducationa l technology. Retrieved from www.indiana.edu/-molepage/Meaning%20of%20ET_4.0pdt on May 14, 2015.

Dugger, W; &Nalik, N. (2001).Clarifying misconceptions between technology educationand education technology. Retrieved fromhttp://iteaconnect.org/TAA/Resources/TAA_Differences.htmlon May 14, 2015 . This articleprovidesclarificationaboutthepurposeanddirectionoftechnologyeducationandeducation al technology as well as standards isedin both educational areas.

Seels, B; & Richey, R. (1994).Retreived from www.aect.org./standard/knowlesgebase.htmlon May 14, 2015.
Thissite definesthefieldof instructionaltechnology andalsodescribeseachmultipledomain of the field.

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ThispowerPointslidehelpsexplainthedifferencesbetwentechnologyeducationandeducationalte chnology.

Unit 2CommunicationandInstruction

Structure2.0Int

roduction

2.1 Objectives

2.2ConceptofCommunication

2.3. Theory of

Communication2.4Nature of

Communication2.5ProcessofC

ommunication

2.6 ComponentsofCommunication

2.7 TypesofCommunication

2.8 Classroomcommunication

2.9.Mass media approachinE.T

2.10DesigningInstructionalsystem

2.11. Formulation of Instructional

Objectives2.12TaskAnalysis

2.13 Let us Sum

up2.15References

2.0Introduction

In the previous unit you got an idea about educational technology and its significance as well asitscomponents.Youfoundthateducationaltechnology canhelptheteacher andtaughttocommunicate in spite of distance and other obstacles. But if this communication or interactionwould not be appropriate it could spoil the whole attempt. Thus the way of communication has agreat importance in our life as well as in the process of teaching learning. This present chapterwilldeal with the concept of communication.

1.9Objectives

Afterstudyingtheunityouwill beable to

- Definecommunication
- Explaindifferenttypesofcommunication
- Examinevariousmodelsofcommunication
- Delineatetheprocessandelementsofcommunication.
- Suggeststrategiesforeffectivecommunication.
- Designinstructionalstrategies.

2.2ConceptofCommunication

Communication is considered as the act of transfer. It is the art and technique of using wordseffectively to impart information or ideas. Communication is the field of study concerned withthetransmissionofinformationbyvariousmeans,suchasprintorbroadcasting.Communication

is concern with the technology totransmit messages. Communication is sending and receivinginformation between two or more people. The person sending the message is referred to as thesender,whilethepersonreceivingtheinformationiscalledthereceiver.Theinformationconveyed can include facts, ideas, concepts, opinions, beliefs, attitudes, instructions and evenemotions. Communication is a skill acquired by an individual to exchange messages, facts, ideas,opinions and even express emotions. Communication means transferring thoughts, information,emotion and ideas through gesture, voice, symbols, signs and expressions from one person toanother.ThewordcommunicationcamefromtheLatinword–communis‖thatdenotes–tomake common‖.It involvessharingof ideaand thoughts.

Attemptshavebeenmadebydifferentauthorstodefinecommunication. A fewareenumeratedbelow:

–Communicationisthe processofpassinginformationandunderstandingfromoneperson to another‖– Keith Davis

–Communication is the process of transmitting information from one person to another‖. – RickyW.Griffin

. –Communication is the intercourse bywords, letters or messages, intercourseof thoughts or opinions.Itis theactofmakingone‟s ideasandopinions known toother‖.–FredG.Meyer.

–Communicationmeanstosharein,togivetoanotherortheinterchangeof–thoughts,opinions orinformation.‖ Webster

–Communicationisanexchangeoffacts,ideas,opinions,oremotionsbytwoormorepersons.‖ W.H.Newman andC.F.SummerJr.

–Communicationinitssimplestformisconveyingofinformationfromonepersontoanother.‖ Hudson

–Communication is the process of passing information and understanding from one person to another.‖Keith Davis

–Communication is a continuing and thinking processdealing with the transmission and interchangewith understandingofideas, factsandcourses ofaction.‖ GeorgeR.Terry

–Communication isthe transmission of information, ideas, emotions, skills, etc. bythe use of symbols, words, pictures, figures, graphs, etc. It is the act or process of transformation that isusuallycalled communication. ‖Berelsoand Steiner

Communication maintains and animates life. It creates a common pool of ideas, strengthens thefeelingoftogethernessthroughexchangeofmessagesandtranslatesthoughtintoaction.‖UNESCO– ManyVoices OneWorld.

2.3.TheoryofCommunication

A theory of any phenomenon seeks to explain how it works. It is a set of statements and generallaws relating to it. In the case of communication, we have a number of theories mainly presentedasmodels foraneasierunderstanding.

FromtheancientGreekphilosopherAristotletotwentiethcenturyscientists,manyhaveproposedmodel s of communication. AncientIndiaalso has its ownoutlook about it.

Therearefour majorassumptionsrelatingtocommunication:

(i) Communicationisaprocesswhichhasnobeginning orending– itbeginsandendsarbitrarily(atrandom).

(ii) Communicationisofthenatureofatransactionwithmanycausesandmanyeffectsondifferentpeopl e. Someofthesearеunintended.

(iii) Communicationhasnumerousdimensions.Itssources,audiences,attitudes,tonesandinfluencesa remultiple.Themessagesaffectboththe sender and the receiver.

(iv) Communicationservesnumerouspurposesfordifferentpartiesthatdirectlyorindirectlyparticipat ein it. Each partyhas its own interestangle.

ASurveyof Theories/Modelsof Communication:

To begin with, Aristotle in his Rhetoric (which means the art ofspeaking andwriting forpersuasion) says that rhetoric is made up of the speaker, the speech and the audience. This formsthebaseof modern theoreticians.

1. Lasswellmodelofcommunication:

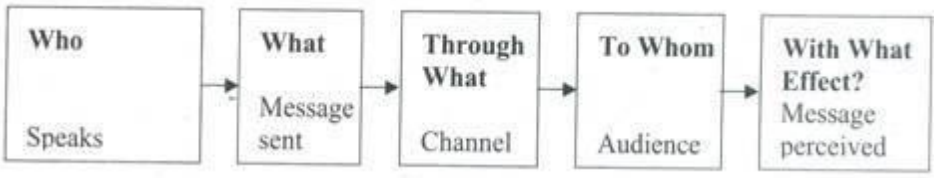
Lasswell,anAmericanpolitical scientist,seekstodescribe communicationbyasking–Who

Sayswhat

Inwhichchannel

Towhom

Withwhateffect?



AccordingtoLasswell,communication hasthreejobstodo:

(i) Observethesurroundings

(ii) Makemeaningoutofit

(iii) Transmitculturefromonegenerationto another.

2. DavidBerlo'sSMCRorSMCRFmodel:

Thispopularmodelprimarilytakesfourelements,namely(i)Sources(ii)Messages(iii)Channelsand (iv) Receivers. Afifth element was lateradded– feedback.

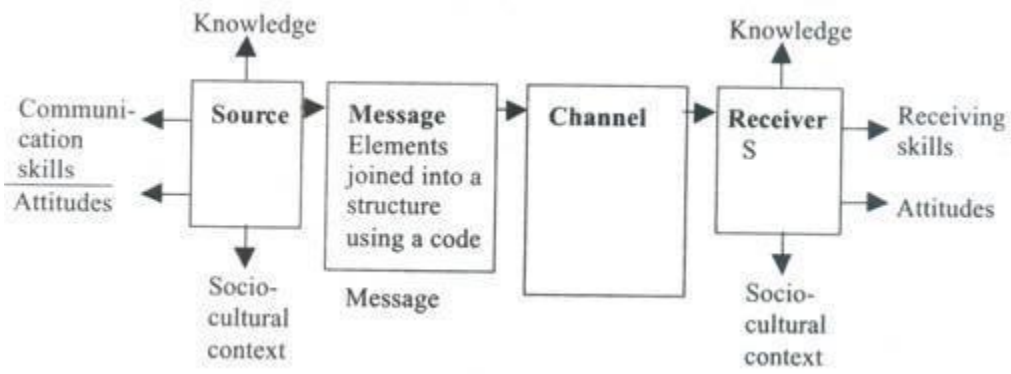
I. Asforthesource,weneedtobeawarehowmuchthesourceknows,hisattitude,hiscommunicativeskill and his cultural context.

II. Themessageismadeupofwords,pictures,etc.Thesourceusestheindividualelementsandjoinsthem to form his meaning.

III. Thechannelcanbeanyofthesenses-
seeing,hearing,touching,smelling,tasting.Multiplechannelscan beusedincommunication.

IV. Thereceiver,too,ischaracterizedbyhis/herknowledge,attitude,receivingskillsandculture.Inthe event ofamajorvariancebetweensourceandreceiver,communicationmayfail.

Berlo says that communication is ongoing and dynamic. A piece of communication is a bucketwith many bits frommany sources–and this bucket is dumped on the receiver. This isalsocalledhis bucket theory.



3. ShannonandWeavermodel:

Theirtheory,presentedasamodel,hasfivekeycomponentsinidealcommunication:

(i) Aninformationsource, creatingamessage

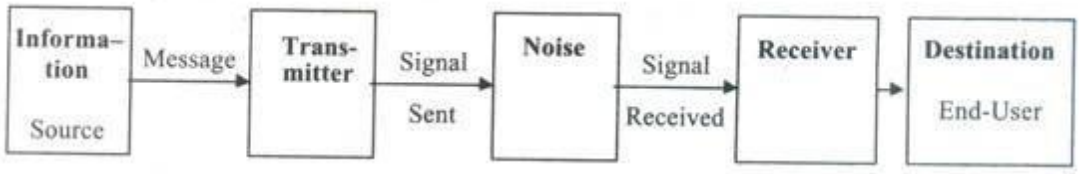
(ii) Atransmitter, convertingthe messageinto asignalwhich canbesent

(iii) Achannel, which can carrythesignal to thereceiver

(iv) Thereceiver, who readsthesignal and takesit to the end-user

(v) Thedestination, thefinal userofthemessage

Thistheoryaddsthesixth,unintendedcomponentofnoise,presentinactualsituations,causinginterferencein thereceptionofthe message.



Inthis theory,noiseisstated asthemainproblemincommunication. Noise is of threetypes(seealso "Barriersto Communication"):

(i) Technicalproblems(e.g. weakantennaofTV)

(ii) Semanticbarriers (–wishhim‖ taken as–poison him‖ under theinfluenceof Hindi)

(iii) Problemofeffectiveness(anadjingleinadull tune)

Tothistheory,KirkandTalbotmakeasupplement,statingthreekindsofnoise(forwhichtheyusetheword distortion).

(i) Stretchdistortion:

Inthis,informationissystematicallychanged.

(ii) Fogdistortion:

Inthis,amessageispartlylostduetosurroundinginterferences(e.g.air-conditionershumming)

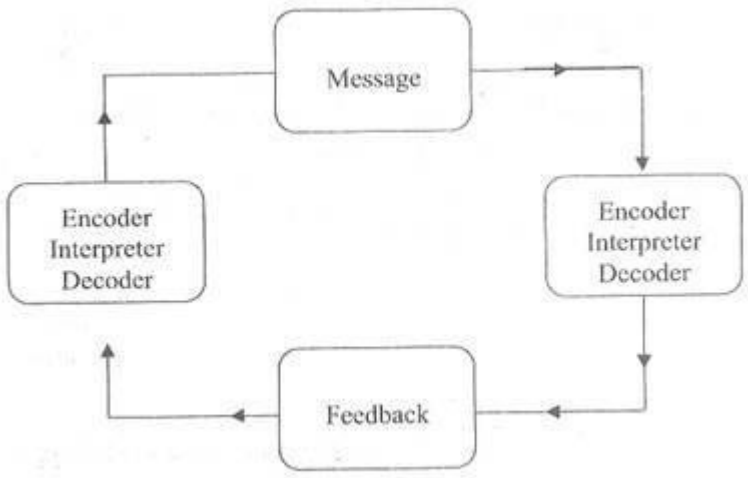
(iii) Miragedistortion:

Inthis,a wordorasignalthat isnotthereisreceived.

TheShannonandWeavermodelwasusedinIndia‘splanningofcommunication.Itwasconsideredthaten coding and decodingarethe vital actsand need the mostattention.

4. OsgoodandShrammcircular model:

In their model, communication is taken as an eminently two-way process, with both partiessendingand receivingbyturns, interactively.



5. Carey’smodel–communicationasaritual:

James Carey, an American anthropologist, gave this model. A ritual is a custom, a traditionalpractice.Thismodelrejectsthetheorythatcommunicationisameansofsocialcontrol.Instead, itstates thatmedia like TVrecall andre-enact myths, valuesand meaningsoflife.

Communication is seen simply as creating shared beliefs, representing the beliefs and celebratingthem.

6. PauloFreire’stheory–communicationasdialogue:

This model rejects Aristotle‘s model which sees communication as a transmission of a message.Instead, it takes communication as a means to liberation, participation in collective life andcreationofawareness(ofrights etc.).

7. Marxism-basedmodel–communicationasapower-relationship:

In this theory, the focus is on the fact that communication is, at times, an exercise of the powerone has over others (individuals or groups). This theory asks us to consider the inequality amongclasses, castes, economic and social groups. Communication is a reflection of the power-relationina family,afactory, or between senders andreceivers ofmass communications.

8. Indiancommunicationtheory:

Indian sage Bharat Muni has written on Indian poetics, and calls sadharanikaran the key processin communication. This term is close to the Latin word communis from which comes the wordcommunication.

Bharat Muni says that right communication is between sahridayas (i.e. those whose hearts areattuned to each other‘s). To be sahridayas, the sender and receiver have to have a commonculture,common learningand beadapted to eachother.

Bharat Muni‘s rasa theory states thatthe human mind has nine permanent moods (sthayeebhavas) and these can be aroused to create nine rasas – i.e. types of aesthetic delight. The rasasinclude bhayanaka rasa (fierce mood), hasya rasa (jocular mood), Karun rasa (compassionatemood)etc.

The message, by producing the desired mood (rasa) in the audience, achieves sadharanikaran(unityof spirit).

This theory emphasizes the receiver‘s mental conditioning by which he/she can be in tune withthe message. Sadharanikaran does not mean to persuade the other party, but stresses the joy ofsharing.

IntheIndiantradition,communicationisamentalsearchformeaningwhoseaimisself-knowledge, freedom and reaching the Truth. While Indian model focuses on the interpretation bythereceiver, Western models stress expression.

A theory of communication derived from Buddhism stresses the impermanence, the changingnatureofcommunication in thefluid world.

9. Islamictheory–communicationforbuildingbrotherhood:

According to the Islamic theory, umma or community is the main thing in communication asagainst Western models which deal mainly with the individual receiver. The Islamic theoryconsiders communication as a tool of building relationships in a community. We remember theoppositionin theMuslimcountriesto Salman Rushdie'shereticnovel.

We note that Rushdie is a product of Western education and is patronized by the Western press,andhis approach is seenas unpalatableto Muslim communities.

2.4 NatureofCommunication

Communication is natural phenomena in living world where individual transmit meaningfulmessages. Animals produce unique sounds to communicatewhereas human beings verbal andnon verbal language to express their feelings and emotion. However communication has uniquecharacteristicsornature.Thosecharacters areas follows

(i) Interchangeofinformation:

Thebasiccharacteristicofhumancommunicationisthatitaimsatexchanginginformation.Itisatwo-way process.Theexchangecanbebetweentwoormorepersons.Itmay beattheindividualorthe organizational level.

(ii) Continuousprocess:

Communication is a continuous process. It is not static. It is constantly subject to change and isdynamic. The people with whom communication is held, its content and nature, and the situationinwhich communication is held– all keepchanging.

(iii) Mutualunderstanding:

The main purpose of communication is to bring about mutual understanding. The receiver shouldreceiveand understand themessagein themannerthat thesender intendedhim to.

(iv) Responseorreaction:

Communication always leads to some response or reaction. A message becomes communicationonly when the receiving party understands and acknowledges it, and also reacts and responds toit.

(v) Universalfunction:

Communicationisauniversalfunction,which coversalllevelsof authority.

(vi) Socialactivity:

Communication is a social activity, too. The components of a society are into a relationship ofsharing,beit information, feelings or emotions.

The same holds true for educational communication. It involves the effort of pupil and teacherto get in touch with one another and to make them understood. The process by which individualsattempt to sharemeaning andrelateto oneanotheris,thus, asocial activity.

(vii) Itinvolves atleasttwo persons:

- Itinvolvesatleasttwopersons,asenderandareceiver.
- Thesenderiscalled„communicator"andthereceiverofthemessageisknownas „communicate".
- Apersonwhospeaks,writesorissuessomeinstructionsisthe„sender/communicator"andthe person whoreceivesthe messageisthe„receiver/communicate".

(viii)InCommunicationmessagesisthemust

- A message is the subject-matter of communication, (eg.) The contents of the letter orspeech,order, instructionsor the suggestions.A communicationmust convey somemessage

(ix) Communicationiswritten,oralorgestural

- Itisgenerallyunderstood asspoken orwritten words.
- Butinrealitycommunication ismorethan speakingandwriting.
- It includes everything that may be used to convey meaning from one person to another.(eg)movement oflips, or the wink of aneyeor the waveof hands.

(x) Communicationisatwowayprocess

- Itinvolvesbothinformationandunderstanding.
- Communication is not complete unless the receiver has understood the message properlyandhis reaction orresponse is known to the sender.

(xi) Itsprimarypurposeistomotivatearesponse

- The primary purpose of communication is to motivate a response or influence humanbehaviour.

(xii) Communicationisformalorinformal

- FormalCommunicationfollowstheformalchannelsprovidedintheorganizationstructure.
- Informalchannelsofcommunicationwhicharenotprovidedintheorganizationstructure.
- Thesechannelsdevelopamongmembersbecauseofpersonalcontactsthroughworkingwithea ch other.

(xiii) Communicationflowsupanddownandalsofromsidetoside

- Communicationflowsdownwardfromasuperiortosubordinatesandupwardfromsubordinatet o asuperior.

(xiv) Communicationisanintegralpartoftheprocessof exchange

- Itreferstotheexchangeofideas,feelings,emotionsandknowledgeandinformationsbetween two or morepersons.

2.5 ProcessofCommunication

Three things are most important and essential in any communication process they are Sender,Receiver and the Channel (medium).The Sender is encoding the messages in any form like voice,written orany signs. Sothey oftencalledas Encoder.The Receiver isdecoding the messagefrom the sender to understand the message. So they often called as Decoder. Any message orInformation needs some channel or a medium. Example: television is an audio visual mediumwhichdecodethe electronic signals intoan audio-visual to the audience.

Theprocessofcommunicationinvolvessevenmajorelements-
sender,message,encoding,channel,receiver, decodingandfeedback.

Sender:

The sender is the person who transmits a message. He is the communicator. He is the one whogets the entire process of communication started. He wants to get his opinions, ideas, facts,thoughts or information across to the receiver. He is, therefore, also said to be the transmitter of amessage.

Message:

A message is the actual information that has to be conveyed. Communication is unthinkablewithout a message. A message triggers a response from the receiver. Messages can broadly bedivided into verbal and non-verbal. The message must be clear, complete, unambiguous andcourteous.

Encoding:

The seeds of communication are sown the moment the sender thinks of transmitting a certainmessage. These thoughts have to be converted into suitable words, pictures, charts or symbols sothattheycan bedelivered to thereceiver.

This process of converting thoughts into suitable words, charts, symbols or any other form inwhich they can be understood by the receiver is called encoding. The choice of the method ofcommunicationis madehere– will the messagebeverbalor non-verbal?

Channel:

How does one communicate? This is what a channel deals with. Communication is achievedthrough a channel. The channel can be a letter, an email, a fax, a telephone or memos, reports,bulletins,posters and manuals.

The choice depends on the relationship between the sender and the receiver as well as on themessage thathastobecommunicated.Otherfactorsthattendtoinfluence the choice of achannel include the gravity of the message, the number of receivers, the costs involved and theamountof information.

Receiver:

The person who receives the message, decodes it and understands it or attaches some meaning toitis thereceiver.

Thereceiverhas toperformthreefunctions:

(i) Receptionof themessage:

Thisis the stagewhen amessagesent bythe senderis sensorial takenin bythereceiver.

(ii) Decodingthemessage:

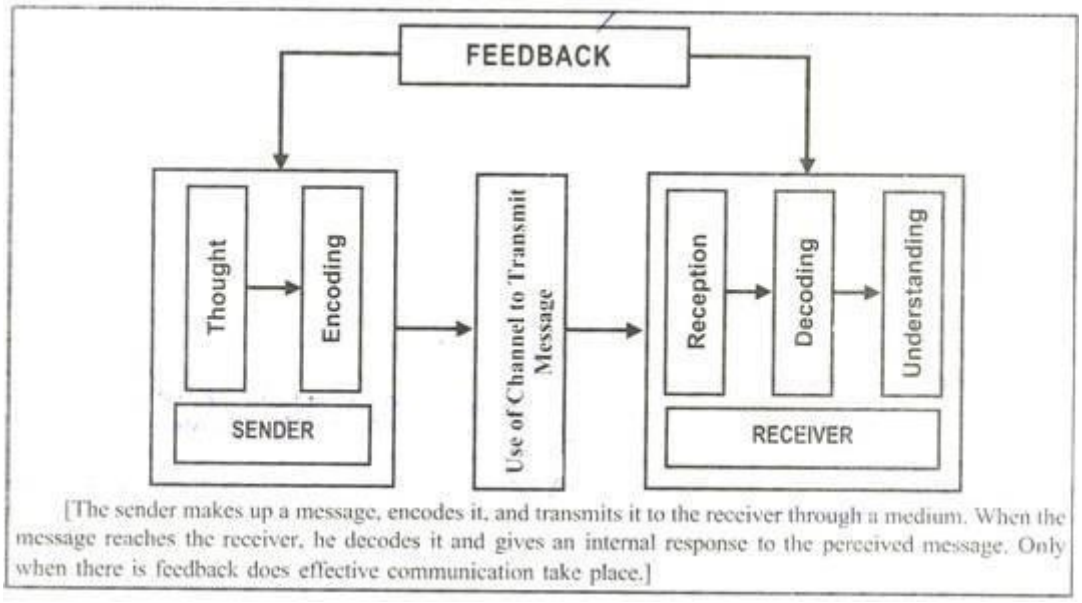
Afterreceivingthe message,the receiverhas toattach somemeaningtoit.

(iii) Understandingthemessage:

Hethen has tointerpret it inthe same wayand in thesamesense as thesender meant it.

Feedback:

The return of communication from the receiver to the sender is known as feedback. It is theresponse, reaction or reply to the communication. It is always directed towards the sender. Thiscompletesthecycleofcommunication.Thus,infeedback,thereceiversendshisreplyorresponse to the sender, indicating that he has understood the message received. In face-to-facecommunication



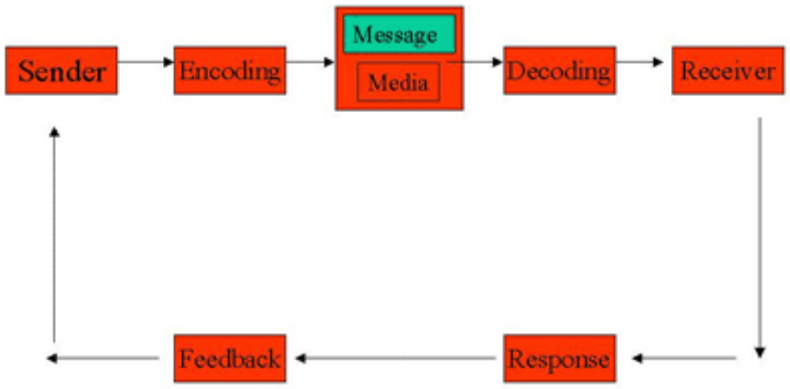
[The sender makes up a message, encodes it, and transmits it to the receiver through a medium. When the message reaches the receiver, he decodes it and gives an internal response to the perceived message. Only when there is feedback does effective communication take place.]

2.6 ComponentsofCommunication

Communication is a process of exchanging verbal and non verbal messages. It is a continuousprocess. Pre-requisite of communication is a message. This message must be conveyed throughsome medium to the recipient.It is essential that this message must be understoodby therecipient in same terms as intended by the sender. He must respond within a time frame. Thus,communication is a two way process and is incomplete without a feedback from the recipient tothesenderonhowwellthemessageisunderstoodbyhim.Themain**componentsofcommunication process**areasfollows:

1. **Context -** Communication is affected by the context in which it takes place. This contextmay be physical, social, chronological or cultural. Every communication proceeds withcontext.Thesender chooses themessageto communicate withina context.
2. **Sender / Encoder-** Sender / Encoder isa person who sends the message. A sendermakes use of symbols (words or graphic or visual aids) to convey the message andproduce the required response. For instance - a training manager conducting training fornew batch of employees. Sender may be an individual or a group or an organization. Theviews, background, approach, skills, competencies, and knowledge of the sender have agreat impact on the message. The verbal and non verbal symbols chosen are essential inascertaining interpretation of the message by the recipient in the same terms as intendedbythe sender.
3. **Message -** Message is a key idea that the sender wants to communicate. It is a sign thatelicits the response of recipient. Communication process begins with deciding about themessage to be conveyed. It must be ensured that the main objective of the message isclear.
4. **Medium -** Medium is a means used to exchange / transmit the message. The sender mustchoose an appropriate medium for transmitting the message else the messagemight notbeconveyedtothedesiredrecipients.Thechoiceofappropriatemediumofcommunication is essential for making the message effective and correctly interpreted bythe recipient. This choice of communication medium varies depending upon the featuresof communication. For instance - Written medium is chosen when a message has to beconveyed to a small group of people, while an oral medium is chosen when spontaneousfeedbackisrequired fromtherecipientas misunderstandingsareclearedthen andthere.
5. **Recipient/Decoder-**Recipient/Decoderisapersonforwhomthemessageisintended / aimed / targeted. The degree to which the decoder understands the message is dependentupon various factors such as knowledge of recipient, their responsiveness to the message,andthe relianceofencoder on decoder.
6. **Feedback -** Feedback is the main component of communication process as it permits thesender to analyze the efficacy of the message.It helps the sender inconfirming thecorrectinterpretation ofmessage bythedecoder.Feedbackmaybeverbal(through

words)ornon-verbal(informofsmiles,sighs,etc.).Itmaytakewrittenformalsoinformof memos, reports, etc.



2.7 TypesofCommunication

Communicationmaybeofthe followingtypes:

1. OralCommunication

- Ittakesplace infacetofaceconversation,groupdiscussions,etc. Spokenwordsare usedtodirect, instruct, and shareexperiences.

2. WrittenCommunication

- Puttinginwritingincludesletters,reports,notesetc.Thewrittenwordsareusedtotransmitone‟s expectations, likesanddislikes.

3. VerticalCommunication

- Verticalcommunicationistheonethatflowsbothupanddown theorganization,usuallyalongwith formal reportinglines.
- Itconsistsoftwo typesnamelyupward communication &downwardCommunication.

1. *UpwardCommunication:*Itconsistsofmessagesfromsubordinatestosuperiors.Themessagemayb ein theform ofrequests, responses, suggestions, complaintsetc.

2. DownwardCommunication: Itoccurswheninformationflowsdownthehierarchyfromsuperiorstos ubordinates.Themessagemaybeintheformofdirections,assignments,performance,feed backetc.

4. HorizontalCommunication

- Thiscommunicationoccursamongcolleaguesandpeersofthesamelevelinanorganization.

5. GrapevineCommunication

- Ineveryorganization,thereisaninformalchannelofcommunicationcalledthegrapevine.
- Itisquitenaturalforagroupofpeopleworkingtogethertobeinterestedinoneanotherandtalk about appointments,promotions, retirements oreven domesticaffairs.
- Thegrapevineisbasicallyachannelofhorizontal communicationbecauseworkersofthesamestatus can informallycommunicate with oneanotherwith perfectease.

6. ObjectCommunication

- The most common form of object communication is clothing. Clothes determineone‟s personality traits. A good example of clothing as object communication is theuniform.
- Also the body adornments such as wedding rings, bindis as marital status, tatoos, andbrands. Also, anything used a status symbol comes under the category of objectcommunication.

7. Intra-PersonalCommunication

- Thiscanbedefinedasa processthroughwhich onecommunicateswithhimself.
- Thismeansthecommunicationiswithin theselfand totheself.
- Forexample,thinking,workingout aproblem,writingdiaries,etc.

8. Inter-PersonalCommunication

- Inter-personalcommunicationmaybedefinedasaprocessofinteractionbetweentwopeople, generallyface-to-facetalk.

- Forexample,interactionbetweenteacherandstudentintheclassroom,atelephoneconversation, interview etc.
- Theemphasisis onspeech, non-verbal formsofcommunication.

Differencebetweeninter-personalandintra-personalcommunication:

Intra-personal communication takes place when a student, without the help from anyone,solves a mathematical problem. HoweverInter-personal communication occurs when hisfriendhelps him in solvingthe samemathematical problemat everystage.

9. GroupCommunication

- It refers to the process of interaction within groups of people and by groups of people toothers.
- Thegroups maybesmallor large.E.g.A familyand committeemeeting.

- **10.*MassCommunication***
- □ Mass communication takes place when the communication is received by large number ofpeople.
- Forexample,open-airconcertfor athousand people,radio,andpostalsystems,etc.

Hencebroadlythereare2basic types of communications:

- VerbalCommunication
- Non-VerbalCommunication

VerbalCommunication

Thecommunicationhappensthroughverbally,vocallyorthroughwrittenwordswhichexpressorconveythe messagetootheris called verbalcommunication.

Example:Babycrying(vocal)isverbalcommunicationwhichexpressthehungryorpainthroughvocally.

Verbalcommunicationhastwotypes

A. OralCommunication

B. WrittenCommunication

- **A. Oral Communication:** A communication which happens through word of mouth,spokenwords,conversationsandalsoanymessagesorinformationaresharedorexchanged between one another through speech or word of mouth is called oral communication. Example: Publicspeech,Newsreading,Television,Radio,telephoneandmobile conversations.
- **B. Written Communication**: A communication happens through any word written oroften written signwhichrefers the languagesuses inany mediumiscalledwrittencommunication. Example:Simply any hand written, typed, Newspaper, printed worddocuments,letters, booksand magazines.
- **Non-VerbalCommunication**:Anycommunicationwithoutwordofmouth,spokenwords, conversation and written languages are called Non-Verbal Communication. Ithappensthroughsigns,symbols,colours,gestures,bodylanguageoranyfacialexpressions are known as non verbal communication. Traffic signals are one of the bestexamplesfornon verbalcommunication.

2.8 Classroomcommunication

Intheprocessofteachinglearningclassroomcommunicationhasagreatimportance.Asteaching is a two way process teacher and learner need to interact with each other to achieve theinstructional objectives. In this regard you as a teacher must aware of effective communicationpattern in a classroom situation. Similarly the students talk and their comunication has veryimportantroleinmakingclasssroomlearningmoreinteractive.Teachewrmustmotivatestudents to participate in talk, discussion, debate so that each student can express their doubts,queries,point ofviewwithout fear.

2.8.1 CommunicationPatternofTeacher: Whenateachercommunicateinsidetheclassroomit may be verbal or non verbal. Again s/he may speak or write verbally and sends messages tothe learner regarding the lesson. Further by movingthe body, head, shoulder, hand,gesture,facialexpressionalsothecommunicationisdonenonverbally.Ateachercanimplementse veral

activities such as s/he mayexplain, derivate, demonstrate, reciteto achieve the instructionalgoals and objectives utilizing proper communicational structure. Teacher‘s talk dependent on thecontext, theme of the subject matter, topic and instructional strategies, media, evaluation tools.Teacher should communicate inside the classroom without any ambiguity. Teacher can interactwiththeindividual students, small groupofstudents or largegroupofstudents.

The classroom communication should be well structured, purposive, positive and pragmatic bynature. That means the communication must have some type of objective or purpose or goal thatshould help the teacher to attain some objective. The communication should give rise to somepositive result and it must be experiential or activity based.a teacher you should talk to yourstudent raising theirlevel of motivation, interest, curiosity. Further greater affinity, attraction,proximityshouldbecreatedforthereceiver.Themessageofclassroomcommunicationshoul dbe valid and accurate. As a teacher in classroom communicationyou should use followingstrategies:

(i) **SimpleandobjectiveLanguage**:Thatmeansteachershouldusesimplelanguage , grammatically correct sentences, adequate vocabulary, to expressthe concept, thought so that it can be easily understood by the learners. Wherepossiblestatetheminpositiveways:forexample,stateexplicitlywhatstudent s have to do for each learning step; keep the language as simple aspossible; use active verbs - eg 'look for this information', 'work in groups ofthree','writedown onlythekeypoints' etc.

(ii) **Checkingforstudents’ Understanding:**Teachermustrepetitively checkwhether students have understood the instructional language or not to proceedfurtherin contentand avoid confusion.

(iii) **Giveinstructionsandinformationinsmallbitesize**'chunks'If,forexample, you want to explain that a learning activity consists of 4 separatesteps, with some studentsyou will need to explain step 1, get the students todo it, than explain step 2, and so on until the activity is complete. It's reallyimportanttogivestudentsthese'landmarks'toguidethemthroughthelearning, abitlikegoing fromtreeto treethroughaforest.

(iv) **Useatoneofvoicethatdoesnotalienatestudents.**It'sveryeasyforteachers to slip into 'teacher mode' when they're talking, using a tone thatdoesn't sound natural to many students, or comes across as bombastic andhectoring.Let'sbeclear-teachersneedtospeakwithauthorityandconfidencebutthetoneofvoicemustbeappropriateforcommunicatingwarmly and positively. Getting the right 'tone' is one of the most importantstepsin successful teacher student communication.

(v) **Becarefulnottotalkfortoolongatastretch.**Mostyoungpeople'sattention span is roughly their chronological age plus or minus three or four.So if you're talking to a class of eleven year olds, the maximum length of timeto talk in one go would be 14 or 15 minutes, but for some their attention maystarttowanderaftereightminutes,orless,assumingthereareno otherdistractions.Ahandyruleofthumbmightbetothinkoftalkingforaminuteor two less than the chronological age of the class, before getting students tothen do something more active, or at least without having to listen attentivelyto the teacher talking. These are not hard and fast rules, and, as with otheraspects of classroom life, so much depends on context and how well theteacher knows the class. Some expert teachers have developed their skill sothattheylimit all teachertalk to no morethan 5 minutebursts.

(vi) **Speak respectfully to students All** teachers know how hard this can be attimes,whenstudentsthemselvesspeakdisrespectfully.Itisneverthelessimportant to do everything possible to maintain a respectful tone, becausepromoting respect is one of the core principles of education, and we must, asteachers, try to take responsibility for modelling respect. It's also true thatmaintaining a respectful tone gives the teacher a better chance to remain incontrol.

(vii) **Establishclearroutinesforwhoisallowedtotalk,andwhenSomestudents are used to interrupting, often impulsively.** Often this is not doneas a deliberate attempt to disrupt the class, but it does, nevertheless, affect theflow of communication. You could use phrases such as, 'I'm pleasedyou'vegotapointtomake,orwanttoaskaquestion,butIneedtofinishwhatI'm

saying and I'll take your question in a minute. Is that OK?' Do it respectfullyand most students will understand, but make sure you do give the student theopportunity to speak at the appropriate time. This is also a way of modellingthat very often in the classroom only one person should speak at a time, andstudentsneed to learn towait theirturnto speak.

(viii) **Ask students to feed back to you,** informally and respectfully, how youcome across when you talk. once worked with a colleague who had what shecalled her 'babble police' - selected students to whom she gave permission totell her, when she'd been talking too long, or going off the point, and just notmaking sense. This can be a risky strategy for some teachers and you probablyneed to pick your class carefully. A small scale trial with a 'sympathetic' classmight be worthconsiderng before rolling it outwith all classes. You don'tneed to use it every lesson, but if you use it regularly and systematically,
itcouldbecomeaverypowerfulstrategytotakeyourteacherstudentcommunicationto another level.

(ix) **Use oftechnology in classroom makes learning more effective and alive.**Teacher may utilize OHP, television, radio, tape recorder, computer, internettechnology
tosupportlearningofstudentsandcansendthemessagestostudentsthrough propermediaand channels.

(x) **Properplanninganddesigningcommunicationalattributesandclassroom presentation can help the teacher to convince the learner aboutthecontext.**Beforeenteringtoclassroomthecommunicationalstructuresho uldbeplanneddesigned.Thepresentationshouldbeassociatedwithrelevantpicture, graphics. slides, graphsetc.

(xi) **Developingclassroomculture**isanotherstrategyforgoodclassroomcommunicati on which should be democratic one and without any biasness anddisharmony.

(xii) **Developing communication skills** among the learner plays crucial role fortwo , learner centric classroom situation. Activities like discussion, debate,brainstormingcan prompt learner to communicate.

(xiii) **Teachermust try bestto create proper physical, social, psychologicalenvironment**inclassroomforeffectivecommunication.Propersitting arrangement,broadnoise/barrierfree,fearfreeandbiasnessfreeenvironmentisessentialforteacher–taughtinteraction.Furtherempathyor –feelingoneness‖emotioninlanguageshouldbeinsertedinformof–we‖, –our‖etcwords. Instant appreciation and patience can make classroonsituationmorelivelyand vibrant forcommunication.

2.9.Massmediaapproachin E.T:

Mass media is the tool of science and tehnology that can convey loads of informan to largersectionofpeoplewithinshorttimespan.Forexamplenewspaper,TV,radio,internetetc.However now a daysthis mass media technology is utilized for educational purposes. Henceeducational technology has been flourished with mass media approach. Mass media haveproved to help in classifying concepts, stimulating group and individual activities, developing acollective critical awareness, changing attitudes, imposing a new structure or organisation oncertain subjects and encouraging originality and creativeness. Therefore, teachers have to beproperly motivated and made interested in the use of such materials. And they have also to betrainedand oriented in theadequate useandmaintenanceof thematerials.

Thereareagoodnumberofmediaformasscommunicationsuchasradio,Television,newspapers and films etc. Previously, the mass media in the form of illustrative were only put tomarginalandindividualiseduse.Therewasneitheranycoherentthinkingnorascientificorganisation of these materials in the educational process.But their increased use has beenmainlydueto interest and initiativeof certain teachers.

The media of communication is the medium by which a piece of information or knowledge iscommunicated to us. This medium is the message, which is of greater importance. Because, thesame piece of information when conveyed on a printed page or over the telephone by radio, ortelevision will appear different and have entirely a different effect on us. Hence the effectivenessof a piece of information depends upon the medium through which it is imparted. Thus, themass-mediaarenot onlythe messages, but also themassage.

Because,itmassagesthe sensory organsandstimulates them torespond actively.Hence, themass media is very important for class room teaching as a part of the process of instruction. Thesoleobjectiveistoimprovetheteaching-learning processwiththeuseofvariousmedia.Therefore, the main purpose of mass-media in education is to benefit more students with fewerteachers orto obtain qualityeducation.

In fact, the mass media have become a well of message around the world of today and haveentered into all the structures of daily life, h can be used and in fact is being used as a means ofeducation.So the roleof mass mediaineducationis gainingimportanceeveryday.

Importanceof MassMedia:

1. MassMediaprovide informationto the masswithin a less time.

2. Ittakesawidecoverageofinformationregardinganythingthatishappeninginanycomeroftheworld.

3. Itbringstheentireworldtotheindividualortotheclassroom.Childrenspendhourstogethersittinginfrontof thetelevisionandcan visualize,hearandacquireknowledge abouttheworld.

4. Thesemediaeasilyreachgroups,allowrepeateduse,givemorereality,influenceattitudes,showcause and effectrelationships and ultimatelymotivatethe audience.

5. Itsendsinformationtoremoteplacesandhelpsindistantlearning.

6. Ithelpsinmodificationofattitudes,inculcationofdesirablevaluesandacquaintancewithculturalheritage.

7. Massmediaactsasanagencyofsocialchange.

8. Massmediaareusefulforreinforcinggroupdynamicsandinterpersonalcommunication.

9. Mass media asmeansof communicationmakeideasclear tochildrenandhelpthemtoacquirecorrectknowledge. Theyhelpin simplifyingandin givingvividnessto explanation.

10. MassMediamaketheinstructionconcreteandstimulateinterestandexcitecuriosityinthings.

‖Education today, therefore, has a far greater responsibility than it had ever before. It has to meetthe demands of a dynamic world which change its character every day. Contemporary educationhas to be more comprehensive and complete than it was ever before. The role of the variousagencies of education like home, society, community etc. has consequently increased, so has theroleofthemassmedialiketelevision,radio,cinema,newspaperincreased.‖Sonow-a-day,press, radio, cinema, television, etc. are becoming more and more important in an individual‘slife.

Massmediaineducationarepress,radio,motion-picture,television,etc.Somassmediaaremany and these are technically called passive agencies of education. They influence the attitudeandbehaviourofthepeopleindirectly.Theseagenciescoverentertainment,informatorypropaganda, historical record, education and improvement of moral judgement and moral tone ofthepeople.

Theroleofsomeimportant massmediaarediscussedbelow:

(a) Radio:

Radio acts as the medium of mass-communication. It is used mainly to broadcast events to farand wide places of the world. It is also a very important source of entertainment. Every day, welistenvarioustalks,discussionsanddebatesfromradio.Theseareextremelyimportantanduseful for the students. Especially for the purpose of teaching, many programmes are broadcastover the radio. So radio acts as a great recreational and education force. It broadcasts scientificandculturalfacts.Itenlightens publicopinion.Itstimulates curiosityand interests.

The radio has proved a valuable supplement to class teaching and learning Educational broadcasting is comparatively a new experiment and is catching on well. Through school broadcasts,expert leaching in such diverse fields of science, social studies, art, music, languages, politics,current affairs and other areas, can provide information and enrichment for pupils and for theteacher.

The educational programmes are broadcasting by the expect teachers with effective methodswhichdemonstratenewideasandapproachestoclassroomprocedures.Programmesareespeci allydesigned in-collaborationwith theexpertsfor differentagegroups inthe schools.

Followingaretheadvantagesof usingradioasmass mediaineducation:

1. Educationalradiobroadcastsprovide"listeningparticipation"Incurrenthistory:

In radio the emphasis is on sound, rather than on picture. So many programmes especially for thepurpose of teaching are broadcast over the radio and special events and (occurrences in the worldarebrought from the sourceimmediatelyinto the classroom.

As a part of classroom teaching, an educational programme may be preceded by an introductionby the class teacher and followed by long discussion among students on the subject-matter underthe broadcast discussion. A talented teacher may teach through radio for the benefit of
thestudents.Soimportanthappenings,elections,inventions,politicaldevelopmentsinothercountriesan dother current topics maybeheardand discussed in the classroom.

2. Educationalradiobroadcastsareeffectivemeansofpresentingmusic,dramaandappreciation :

Radio is also a very important source of entertainment. Various talks, debates & discussions heldover the radio are extremely informativeand useful. For the school children, different items oftheschool subjects can bepresented in theform ofdramatisedprogrammes.

Educational radio has excellence through dramatization, dialogue, musical features and othercreative programmes which are not possible in day-to-day classroom teaching. Besides these,school concerts, folk and classical music, drama and discussion programmes of school, local andfromother states aresometimesbroadcast forlisteningin byotherschoolsinIndia.

3. Educationalradiobroadcastsareteam-teachingdemonstrations:

The radio also provides opportunity for student participation in various programmes such as quizcompetitions, travel talks, plays, stories, development of lessons, projects and work programmesin the form of team teaching demonstrations. This is being arranged by the combined efforts ofthe best resources in consultation with the specialists and some other subject experts. Subjectcontent, curriculum validity, suitability for age groups and teaching methods are all kept in mindwhileaccomplishingtheprogramme.

4. Educationalradiobroadcastsenlisttheparticipation oflocalteachersandpupils:

Well-plannedradiobroadcastsarepresentedinsuchawayastoengagetheactiveparticipationof the local teachers and pupils. So there should be preliminary study and discussion on the topicbefore broadcast time. The class may be encouraged through broadcast suggestions to carry onfollow-updiscussion, projects or creativeactivities.

Theteachersandthepupilsboth shouldpreparematerial thoroughlybeforepresentingtheprogramme. They should utilise all resources possible to make the programme of a very highquality and worth-listening into from the point of view of content, speech, style, audibility andpresentability.

5. Educationalradiobroadcasthelpsin thelongrun,tomakelearninganopensystem:

Educational radio can offer corrective programmes for self learning by the individuals. It canreach the participants while at work, at play, at drawing room, at recreational centres breaking allboundaries and constraints of formal education. Being an expensive medium, it has reachedvillagesandis nowavailable in verycomer ofthesociety.

Since learning directly from the teacher is minimal and there is increasing stress on a system ofopen learning to overcome the rigidities of formal education, and there is more emphasis onlearning through various mass media. Educational radio broadcasts are expected to play animportant role towards a system of open learning. The non-formal approaches of educationalradio can supplement the movement for de-schooling society. All the programmes lead towards alearningsocietywhere everybodycanlearnat anytime at anyplace.

Radiois,atpresent,notonlyoneofthepopularmassmedia,butalsoapotentialinstructionaltool in the formal, informal and non-formal education. It is now giving more emphasis on theplanning and production of science programmes in both the formal and no-formal spheres ofeducationalbroadcasts.

There are also special programmes for teachers and teacher-education in most of the stations.These are intended to familiarize methods of teaching. These service has been more necessitatedin recent years on account of large changes in school curriculum and methodology particularly insubjectslike science, mathematics, social studiesand English.

Secondary School Broadcasts aim at helping students and teachers by giving up-to-date contentknowledge,providingnewapproachesandmethodsofteaching.Afewnon-syllabusprogrammesarehowever,broadcastinordertobreakawayfromthestereotypedformaleducation, for doing away with monotony in the curricular topics and also to stimulate awarenessand curiosity about the modem world dealing with them ranging from popular science to currentaffairs.

Besidessecondaryschoolsbroadcasts,primaryschoolprogrammeshaverecentlyassumedgreater importance. This has been done in order to reduce wastage and stagnation at the primaryschoolstagebymakingthe school situation moreattractiveandinteresting.

Theradiowithitsvastresourcescanorganizeaseriesofprogrammesinordertobringuniversalization of primary education and promote adult literacy. The programmes are beingrelated to their education, health, hygiene, nutrition etc. with a thrust on bringing the audienceintothe mainstream of national life.

So, radio is an effective medium. It has occupied a significant place in communication. It is alsoplayinganimportantroleineducation.Itnotonlyinforms,butalsoinspires.Itnotonlyinculcatesvalues andvirtues, but alsocreates attitudes,interests and appreciation.

(b) Television:

Today, television has become an extremely popular source of entertainment among youngsters.We listen and see the instruction of the speaker from the television. So the whole personality ofthe child is engaged in the task. Hence, it has become the most important and powerful agency ofmass communication.Intelevision, news items are not only read out but the events are shown.Asaresultofwhichnotonlyproblemsarediscussedbutpracticalremediesandsolutionsarealsosuggested.

So, educational television is the most recent audio-visual media for class instruction. There areprogrammes on the television especially for the school children. These programmes are aimed ateducating the school children and they instill good moral values. Television can give a very goodidea of the history of the country through dances, short-films on historical places, museums etc.Thustelevision plays avital role as ameans of massmedia in educatingthe masses.

Advantagesof EducationalTelevision:

The advantages of educational television are many. Theyoung people watching the televisioncan get a very good idea of how it really happened. For example the nuclear explosions of thelaunchingof rockets areprogrammesofextreme educational value.

Thestudentscanseeforthemselveshowsciencehasadvanced:

(1) Educational television is capable of making available many needed and so far inaccessiblelearningexperiences.

(2) Educationaltelevisionbringsaboutcontinuingco-operativeplanningbyteachers,supervisors,learningmaterials exports and skilful production teams.

(3) Good and effective educational television broadcasts result from the outgrowth of curriculumplanning,of contentanalysisandoftheselectionofthismost appropriateinstructionalmedia

(4) It can use a variety of audio-visual aids, motion pictures, film-strips, slides, recordings,drawings,mapsandotherprojectedandnon-projectedaidscanbedemonstratedthroughTelevision. Video-tapes and recordings on television

bring us the launching of space rockets, ofpoliticaland social events.

(5) Educationaltelevisionbringsusanewkindof teachingteamintoexistence.

(6) Itcanacquaintthechildrenwithpastculture,historyandsociallife.

(7) Itcanmotivatebothchildrenandadults,becausenotonlyitis educative butalsoentertaining.

(8) Thetelevised-lecturesaremorethrillingastheybringtothelistenersnotonlyverbalinformationandtheinstructionofthespeakerbutalsothewholeofhispersonalityengagedinthe task.

(9) National problems like those of population and poverty and illiteracy are often highlightedanddiscussed over thetelevision.

(10) It plays an important role to play in educating the children on the history and culture of ourcountry.Itgivesaverygoodideaofthehistoryofthecountrybytelecastingvariousprogrammesthrough dances, short filmson historical places, museumsetc.

Thus television plays a very vital part, as a means of mass media in educating the masses. It is adynamic and powerful medium which influence education. Its effective use is based upon thefundamental psychological principles of learning which apply to all successful processes oflearning.

DevelopmentofEducationalTelevisionExperimentinIndia:

The development of educational television in India can be traced back to the General Conferenceof UNESCO held in New-Delhi in 1956. Thus the experimental television service was startedwith the objectives of ‑experimentation, training and evaluation‖as a part of the UNESCO Project. During 1960-61 a series of social education programmes were telecast in collaborationwith UNESCO.

The nature as well as impact of these programmes was evaluated by the National FundamentalEducation Centre and Indian Adult Education Association, New-Delhi. Regular TV. Service wasinauguratedinDelhionthe15thAugust,1965.Itwasalandmarkinthehistoryoftelevisionwithlaunchingof the‑KrishiDarshan‖programme forfarmers.

One grand project on television was undertaken and accordingly some T.V Sets were installed insecondaryschoolsby1985.Afterexecutionofthisproject,thiswasalsoevaluated.Theexperimentsofa llthese projectsweresignificantlybeneficial,enlighteningand interesting.

Day-by-day the use of educational television increased at a rapid rate and tremendous progresshas been made in use of educational television in India after 1982. As the number of schoolsequipped with T.V. sets increase, benefit of E.T.V. programmes were extended to number ofstudents in different subjects like Physics, Chemistry, Hindi, English, Geography and currentaffairs.

ThefamousSatelliteInstructionalTelevisionExperiment(SITE)wasimplementedduring1975-76. This was inaugurated by Smt. Indira Gandhi, the then Prime Minister of India at Ahmedabadonthe1stAugust,1975.TheT.V.Programmescouldbetelecastwiththehelpofasatellitecall edATS-Floaned bytheNational Aeronauticsand SpaceAdministration, USA.

The T.V. programmes were related to Education, Agriculture, Health, Family Planning, NationalIntegration and so on. Rural population was selected as the target audience for this project. InOrissatheschemewasimplementedinthreedistricts-Dhenkanal,SambalpurandPhulbani.BesidesOrissa,theprojectwasundertakeninAndhraPradesh,Bih ar,Karnataka,MadhyaPradeshand Rajasthan. Theschemewas effectivein educatingthe rural people.

INSATProjects:

After successful implementation of SITE in 1975-76 in India by NASA, USA; India decided tohave a Satellite of her own. With a view to utilizing the INSAT capability for educationaldevelopment, the Ministry of Education initiated action for preparing plans of operation as earlyas in July 1979. So a meeting was convened by the Ministry of Education on the 30th January,1980 to discuss the background paper and all connected issues involved in the satellite utilisationforradio and television programmes.

The Ministry of Education, Government of India, in collaboration with UNESCO, convenedNational Workshop on Educational Broadcasting from December 1 to 6, 1980 at New Delhi.
TheworkshopassumedspecialsignificanceonaccountoftheNation‘srenewedemphasisonEducationalBroadcastingon theeven ofputtingINSAT in theorbit.

So the first Indian Satellite, INSAT-IA was launched on 10 April, 1982. The second satelliteINSAT-IB was launched on 30 August 1983 with modified advanced technical equipment‘s fortheuseof educational broadcasts through television.

The Central Institute of Educational Technology under the NCERT at New Delhi, is mainlyconcernedwiththedevelopmentofinnovationsandwithusingvariousmediainschooleducation. It is engaged in the development of an attractive system of education using televisionthroughINSAT toreachinand outofschoolchildren and teachersin ruralareas.

It produces E.T.V. programmes and these programmes are being telecast via INSAT. StateInstituteofEducationalTechnology(SBET)hasbeensetupinsixstatessuchasAndhraPradesh, Bihar, Gujarat, Maharashtra, Orissa and Uttar Pradesh in order to implement the INSATforeducation project effectively.

Orissa is one of the six states to avail itself the T.V. Services through INSAT. Now-a-days, moreemphasisisgiventotheproductionofETVprogrammesforthechildrenintheagegroup5-8and 9-11 years and teachers of primary schools. The ETV programmes of Orissa are beingtelecastfor45 minutesstarting from 10.30a.m. to11.15a.m.with 5 minutesforchangeover.

There are Advisory Committees, one at the state level for the entire INSAT project and anotherfor ETV programmes throughtheINSAT. Atpresent more districts like Cuttack, PuriandBalsasorearebeingincluded in thescheme.

IntheINSATstates(AndhraPradesh,Bihar,U.P,Gujarat,MaharashtraandOrissa),Education T.V. Programmesare telecastforfive day in a week for 45 minutes per day. Thisisdone withthe school hours. A recent study carried out in Orissa by the CIET has brought out that only in15%ofthe cases, therehas been successful utilisation ofthe equipment.

The six INS AT states were expected to create State Institutes of Educational Technology (SET)to function autonomously. So far, only Orissa has takena decision on the creation of thisInstitute.As aresult, abuildingforSIET hasbeen constructed atBhubaneswar.

118 posts for Academic&Production, Engineering and Administration have beenreleased bytheGovernmentofIndiaIntheexistinginstitution,technicalandprofessionalpostshaveremainedunfilled.

At present ETV programmes are being telecast via INSAT-ID since 1990 after the expiry ofINSAT -IB and the failure of INS AT-IC. The INSAT is a challenging National project and itsexperimentsinteralia,willprovidenewlightandinsightintotheviewingproblemsandconditionsof therural audiencedeprived ofmodem sophisticated media.

(c) ThePress:

The Press covers the entire printed matter. These printed matters are books, magazines, journalsor newspapers. Reading matter has vast potentialities. It exerts good influence on the individuals.Itactsontheintelligenceandemotionsoftheindividualsinshapingoutattitudesandphilosophiesof life.

An educated individual one who has an open mind, a general awareness and knowledge of theworld around him. His field of knowledge is vast and varied. Newspapers contribute very largelyin education for the above end. Press not only gathers events, they also present their own viewson issues.

Sothereadergetsanopportunitytoconsideranissuefrommanyangles.Pressalsocontributesto the study of History, Geography, Science, Literature etc. The knowledge is supplemented tothesesubjects bythe newspapers.

It is possible to link certain topics with everyday life by means of the press through newspapersandotherjournals. Thechild must beawareofwhat is happeningintheworld aroundhim.

So the press is an important service that can render to education by imparting knowledge ofcurrentaffairstochildren.Newsregardingearthquakes,cyclones,newplanetsandpolitical

changes may be brought to the notice of the pupils by the press. It also gives a great deal ofhistoricalinformation.

The pupil‘s limited knowledge of history may be elaborated and enhanced by this press. So thepressis to serveas oneof the important medium of education andinstruction.

(d) ThemotionPictures:

The motion pictures exercise a great influence on human mind very skilfully. They help to createlasting values in the pupils. There is also wider use of films in education. Educational films arecoming into the field to meet the challenge of commercial pictures, to supplement them and toexplorenewavenuesofeducatingchildrenandadults.Thesefilmscangivemorereality,influence attitudes, show cause and effect relation and motivate the students., Thus these motionpictureshavegreat instructional forcewhich can beusedintelligentlyin theclassroom.

There are many areasof learning which canbe properly dealt withthe help of films.Forexample, in teaching of geography or science, we can use these motion-pictures. Rivers of India,climateofIndiaetc. canalso be taughteffectivelywiththehelp ofthe motionpictures.

AdvantagesofMotionPictures:

1. Theeducationalfilmsmaketheconceptmore clear,durable andrealistic.

2. Motionpicturesarouse interestin childrenandsatisfytheir emotions.

3. Theycanpresentabstractandabstruseproblemsoflifeandnatureinconcretereality,illuminate the hidden meanings of events and mysteries of nature, reconstruct history in a shortmirrorof life.

4. Motion pictures bring the past, thedistant to the class room.It can bring the whole world totheclassroom.

5. Events which occur over-days can be made to appear in seconds. So Motion pictures can alsobereplayed manynumber oftimes when andwhererequired.

6. Motionpicturescanbest be usedfordemonstration ofskillsandexperiments.

7. Motion pictures can serve the purpose better, if they are made for specific age and abilitygroups, if they can be fitted into the school syllabus, if the commentary is simple and straightforward.

8. Motion pictures can be of great service in teaching the backward children, because they do actonthe imagination ofchildren.

Today, education plays a vital role. It has to meet the demands of a dynamic world. The role ofthe various agencies of education has consequently increased. Thus the role of mass media aspassiveagenciesofeducationcannotbeunder-estimated.Becauseithastremendousinfluenceonthe attitudeand behaviour ofthe people.

PrinciplesofusingMassMedia:

The teacher should make all necessary arrangements for using the mass media very effectively.He should select the mass media according to the age level of the students. He must know somegeneralprinciples of usingthe mass media.

1. Organisation:

Mass media should be organised as integral part of the educational programmes. They should notbeseparated from othercurricular activities.

2. Selection:

Mass media should be properly selected and coordinated by the teacher. An experienced andtrainedteachercan selectthemass mediaaccordingto theneedsof thestudents.

3. Planning:

Mass media should be available according to the need of the instructional programme. Theteachers should possess skill in the use of mass media. They should have special training in theirpreparation. So theyshould be properlyplanned.

4. Experience:

Massmediashouldberelatedtopupil‘sexperience.

5. Preparation:

There should be adequate preparation on the part of pupils. The teacher should prepare himselfbefore using it. He should know what the mass media teach and where they fit into his plan ofteaching.Adequate preparationshouldbe followedby proper presentationandanadequatefollow-up.

6. Evaluation:

Mass media should be evaluated at regular intervals in regards to their use, effect on learning andtheirfunctions.

2.10DesigningInstructionalsystem

InstructionalDesign(alsocalled**InstructionalSystemsDesign(ISD)**)isthepracticeofcreating "instructional experiences which make the acquisition of knowledge and skill moreefficient, effective, and appealing." The process consists broadly of determining the current stateand needs of the learner, defining the end goal of instruction, and creating some "intervention" toassist in the transition. Ideally the process is informed by pedagogically (process of teaching) andandragogically(adult learning) tested theories of learning and may take place in student-only,teacher-ledorcommunity-basedsettings.Theoutcomeofthisinstructionmaybedirectlyobservableand scientifically measured or completely hidden andassumed. There aremanyinstructional design models but many are based on the ADDIE model with the five phases:analysis, design, development, implementation, and evaluation. As a field, instructional design ishistorically and traditionally rooted in cognitive and behavioral psychology, though recentlyConstructivism(learningtheory)has influencedthinkingin thefield.

Instructionaldesignmodels

ADDIEprocess

Perhaps the most common model used for creating instructional materials is the ADDIE Model.Thisacronymstandsforthe5phasescontainedinthemodel(Analyze,Design,Develop,Implement,and Evaluate).

Brief History of ADDIE's Development–The ADDIE model was initially developed byFloridaStateUniversitytoexplain–theprocessesinvolvedintheformulationofaninstructional systems development (ISD) program for military interservice training that will adequately trainindividuals to do a particular job and which can also be applied to any interservice curriculumdevelopment activity.‖[50] The model originally contained several steps under its five originalphases (Analyze, Design, Develop, Implement, and [Evaluation and] Control), whose completionwas expected before movement to the next phase could occur. Over the years, the steps wererevised and eventually the model itself became more dynamic and interactive than its originalhierarchical rendition, until its most popular version appeared in the mid-80s, as we understand ittoday.

Thefivephases arelistedand explainedbelow:

ADDIEModel

Analyze – The first phase of content development is Analysis. Analysis refers to the gathering ofinformation about one's audience, the tasks to be completed, how the learners will view thecontent, and the project's overall goals. The instructional designer then classifies the informationtomakethe content more applicable and successful.

Design – The second phase is the Design phase. In this phase, instructional designers begin tocreatetheirproject.Informationgatheredfromtheanalysisphase,inconjunctionwiththetheoriesand modelsofinstructionaldesign,ismeanttoexplainhowthelearningwillbeacquired. For example, the design phase begins with writing a learning objective. Tasks are thenidentifiedandbrokendowntobemoremanageableforthedesigner.Thefinalstepdetermines

the kindof activities required for theaudienceinorder tomeetthegoalsidentified intheAnalyzephase.

Develop – The third phase, Development, involves the creation of the activities that will beimplemented. It is in thisstagethattheblueprintsofthe designphaseareassembled.

Implement – After the content is developed, it is then Implemented. This stage allows theinstructional designer to test all materials to determine if they are functional and appropriate fortheintended audience.

Evaluate – The final phase, Evaluate, ensures the materials achieved the desired goals. Theevaluation phase consists of two parts: formative and summative assessment. The ADDIE modelis an iterative process of instructional design, which means that at each stage the designer canassess the project's elements and revise them if necessary. This process incorporates formativeassessment, while the summative assessments contain tests or evaluations created for the contentbeing implemented. This final phase is vital for the instructional design team because it providesdataused to alter and enhancethe design.

Connecting all phases of the model are external and reciprocal revision opportunities. As in theinternalEvaluation phase,revisions shouldand canbemadethroughout the entireprocess.

MostofthecurrentinstructionaldesignmodelsarevariationsoftheADDIEprocess‘

Another well-known instructional design model is **The Dick and Carey Systems ApproachModel**. The model was originally published in 1978 by Walter Dick and Lou Carey in their bookentitled*TheSystematicDesign of Instruction*

DickandCareymadeasignificantcontributiontotheinstructionaldesignfieldbychampioninga systems view of instruction, in contrast to defining instruction as the sum of isolated parts. Themodeladdressesinstructionasanentiresystem,focusingontheinterrelationshipbetweencontext,content,learningandinstruction.AccordingtoDickandCarey,"Componentssuchastheinstructor,learners,materials,instructionalactivities,delivery system,andlearningandperformanceenvironmentsinteractwitheachotherandworktogethertobringabouttthedesired

student learning outcomes".[56]The components of the Systems Approach Model, also known astheDick and CareyModel, areas follows:

- Identify Instructional Goal(s): A goal statement describes a skill, knowledge or attitude(SKA)that a learner will be expected to acquire
- Conduct Instructional Analysis: Identify what a learner must recall and identify whatlearnermust be able to do to perform particular task
- Analyze Learners and Contexts: Identify general characteristics of the target audience,including prior skills, prior experience, and basic demographics; identify characteristicsdirectly related to the skill to be taught; and perform analysis of the performance andlearningsettings.
- Write Performance Objectives: Objectives consists of a description of the behavior, thecondition and criteria. The component of an objective that describes the criteria will beusedto judgethe learner's performance.
- DevelopAssessmentInstruments:Purposeofentrybehaviortesting,purposeofpretesting,purposeofpost-testing, purpose ofpractiveitems/practiveproblems
- Develop Instructional Strategy: Pre-instructional activities, content presentation, Learnerparticipation,assessment
- DevelopandSelect InstructionalMaterials
- Design and Conduct Formative Evaluation of Instruction: Designers try to identify areasofthe instructional materials that need improvement.
- Revise Instruction:To identifypoor testitemsandtoidentifypoorinstruction
- Design andConductSummativeEvaluation

With

thismodel,componentsareexecutediterativelyandinparallel,ratherthanlinearly.Anotherinstructional

designmodelisthe**GuaranteedLearning**modelformerlyknownasthe
Instructional Development Learning System (IDLS). The model was originally published in1970 by Peter J. Esseff, PhD and Mary Sullivan Esseff, PhD in their book entitled *IDLS—ProTrainer1:How to Design, Develop, and ValidateInstructionalMaterials*.

Peter (1968) & Mary (1972) Esseff both received their doctorates in Educational Technologyfrom the Catholic University of America under the mentorship of Dr. Gabriel Ofiesh, a foundingfather of the Military Model mentioned above. Esseff and Esseff synthesized existing theories
todeveloptheirapproachtosystematicdesign,"GuaranteedLearning"aka"InstructionalDevelopment Learning System" (IDLS). In 2015, the Drs. Esseffs created an eLearning course toenableparticipantstotaketheGLcourseonlineunderthedirectionofDr.Esseff.SeeGuaranteedLearning.coforfurtherinformation (2015-3-13).

ThecomponentsoftheGuaranteedLearningModelarethe following:

- Design ataskanalysis
- Developcriteriontestsandperformancemeasures
- Developinteractiveinstructionalmaterials
- Validatetheinteractiveinstructionalmaterials
- Create simulations or performance activities (Case Studies, Role Plays, andDemonstrations)

2.11.FormulationofInstructionalObjectives

Aninstructionalobjectiveisadescriptionoftheresultexpectedfromalearningexperience. It describes the performance or the behavior expected of the leaner at the end of thelearning activity. The term instructional objective is used interchangeably with performance,behavioralor learningobjective.

Objectives are essential in all phases of instructions. Instructional objectives give thefollowingadvantages:

- They provide aguideinselecting thematerialstouse andthemethodstoemploy inteaching.
- Theyprovidestandards formeasuringacceptablestudent behavior.
- Theyserve as criteriaforevaluatingthequalityand efficiencyof instruction.

- Theyserveasa contractbetween the learnerandtheinstructor.
- Theyallow self-evaluationon thepart ofthe learner.

ClassificationofEducationalObjectives

Objectives may fall in any of the three domains. Years ago, Bloom and other educationalpsychologists came up with three classification of objectives to assist in developing assessmentinstruments.Theselearningdomains arecognitive, affective, and psychomotor.

Cognitive objectives deal with knowledge and the five intellectual abilities related toprocessing of knowledge. Objectives in the cognitive domain range from the simplest to the mostcomplex. They are comprehension, application, analysis, synthesis, and evaluation. The learnersmust first possess the basic knowledge before they can engage in higher level of cognitiveperformance.

In Bloom's taxonomy of cognitive domain, objectives are arranged in a hierarchy. Thelowestlevel isknowledge, whichinvolves recallingorrecognizing anidea orconcept.

Comprehension is the second level. It is the ability to translate an idea or concept fromoneform to another.

Application,ontheotherhand,istheuseofanideaorinformationinanewsituation. Forinstance,whatyoulearninthelecture,canyouapplyitinthefield.

The fourth level is **analysis**; to examine or break down a complex concept into parts orelements.

Synthesis,whichmeansputtingtogetherinformationinaneworuniquewayisthefourthlevel.

The highest level in the hierarchy is evaluation. It is the process of making judgmentaboutsomethingusingexternalcriteria.Judgingtheinternalcoherenceofapieceofcommunic ationsuch as aproposal oraplan is anexampleof evaluation.

Affective objectives.When the expected performance deals with actions associated withfeelings and emotions, they belong to the affective or attitude domain. Affective outcomes aremoredifficult to assess sincefeelingsarehighlysubjectiveand internal.

Skills in the **affective domain** describe the way people react emotionallyand their ability to feelother living things' pain or joy. Affective objectives typically target the awareness and growth inattitudes,emotion, and feelings.

Therearefivelevelsintheaffectivedomainmovingthroughthelowestorderprocessestothehighest:

Receiving

Thelowestlevel;thestudentpassivelypaysattention.Withoutthislevelnolearningcanoccur.Receivingi sabout thestudent's memoryand recognitionas well.

Responding

Thestudentactivelyparticipatesinthelearningprocess,notonlyattendstoastimulus;thestudentalso reacts in some way.

Valuing

Thestudentattachesavaluetoanobject,phenomenon,orpieceofinformation.Thestudentassociates avalue orsomevalues to theknowledgetheyacquired.

Organizing

The student can put together different values, information, and ideas and accommodate themwithinhis/herownschema; comparing,relatingand elaboratingonwhathasbeenlearned.

Characterizing

Thestudentholdsaparticularvalueorbeliefthatnowexertsinfluenceonhis/herbehaviorsothatit becomes acharacteristic.

Psychomotor

Psychomotorobjectivesarethosehavingtodowithmanualandmotorskills.Physicalactivitiesa nd otherskills that requirebodycoordination belongto this domain.

Skillsinthe**psychomotordomain**describetheabilitytophysicallymanipulateatoolorinstrument like a hand or a hammer. Psychomotor objectives usually focus on change and/ordevelopmentin behaviorand/or skills.

Bloom and his colleagues never created subcategories for skills in the psychomotor domain, butsince then other educators have created their own psychomotor taxonomies.[6]Simpson (1972)proposedthe followinglevels:

Perception

The ability to use sensory cues to guide motor activity. This ranges from sensory stimulation,throughcueselection,totranslation.Examples:Detectsnon-verbalcommunicationcues.Estimate where a ball will land after it is thrown and then moving to the correct location to catchthe ball. Adjusts heat of stove to correct temperature by smell and taste of food. Adjusts theheight of the forks on a forklift by comparing where the forks are in relation to the pallet. KeyWords:chooses,describes,detects,differentiates,distinguishes,identifies,isolates,relates,selects.

Set

Readinesstoact.*Itincludesmental,physical,andemotionalsets.Thesethreesetsaredispositionsthatpredetermine a person's response to different situations*(sometimes calledmindsets). Examples: Knows and acts upon a sequence of steps in a manufacturing process.Recognize one's abilities and limitations. Shows desire to learn a new process (motivation).NOTE:ThissubdivisionofPsychomotoriscloselyrelatedwiththe‒Respondingtophenomena‖ subdivision of the Affective domain. Key Words: begins, displays, explains, moves, proceeds,reacts,shows, states, volunteers.

Guidedresponse

*The early stages in learning a complex skill that includes imitation and trial and error. Adequacyofperformanceisachievedbypracticing.*Examples:Performsamathematicalequationasdemonstrated.Followsinstructionstobuildamodel.Respondstohand-signalsofinstructorwhilelearningtooperateaforklift.KeyWords:copies,traces,follows,react,reproduce,responds.

Mechanism

This is the intermediate stage in learning a complex skill. *Learned responses have becomehabitual and the movements can be performed with some confidence and proficiency*. Examples:Use a personal computer. Repair a leaking tap. Drive a car. Key Words: assembles, calibrates,constructs,dismantles,displays,fastens,fixes, grinds, heats,manipulates, measures, mends,mixes,organizes, sketches.

Complexovertresponse

The skillful performance of motor acts that involve complex movement patterns. Proficiency isindicated by a quick, accurate, and highly coordinated performance, requiring a minimum ofenergy. This category includes performing without hesitation, and automatic performance. Forexample, players will often utter sounds of satisfaction or expletives as soon as they hit a tennisballor throw afootball, becausetheycan tell bythefeelof theact what the result will produce.

Adaptation

Skillsarewelldevelopedandtheindividualcanmodifymovementpatternstofitspecialrequirements. Examples: Responds effectively tounexpected experiences. Modifies instructionto meet the needs of the learners. Perform a task with a machine that it was not originallyintended to do (machine is not damaged and there is no danger in performing the new task). KeyWords:adapts, alters, changes,rearranges, reorganizes, revises,varies.

Origination

Creating new movement patterns to fit a particular situation or specific problem.Learningoutcomes emphasize creativity based upon highly developed skills. Examples: Constructs a newtheory. Develops a new and comprehensive training programming.Creates a new gymnasticroutine. Key Words: arranges, builds, combines, composes, constructs, creates, designs, initiate,makes,originates.

The major criterion in determining the domain to which an instructional objective belongsto is the primary performance called for. For instance, when the objective has something to dowithknowledgeormentalability,itbelongstothecognitivedomain.Whentheexpectedperformance deals with attitude, it belongs to the affective domain. When it relates with skills orphysicalactivity, thenitcan be classified as psychomotoror skills domain.

WritingInstructionalObjectives

Different authors discuss parts of an instructional objective differently, however therecommon parts. Minnick (1989) for example gave 4 parts on instructional objective, namely,preamble,verb,object,andchunk.Otherauthorsgive3partsonly,verb,theconditions/restrictions under which the behavior is to be demonstrated, and the criterion foracceptableperformance.

Preamble.The first part or the beginning of theobjective that set the stage to follow isthepreamble. Examplesofpreamblesare as follows:

1. Afterreadingthe module
2. Attheend ofthis presentation
3. Thislecturewillenable

Verb.The second part of the objective is the verb. The emphasis here is on the action orbehavior the learner is to perform. When we state our objectives, we should use verbs that arespecific,measurable,andobservable.Lookatthefollowinglistsofwordsandseethedifferencebetween them.

A	B
Identify	Understand
Describe	Know
Compare	Appreciate
Construct	Learn

Words in list A are specific whereas words in list B are vague and could be open to manyinterpretation. Minnick (1989) calls specific verbs ***closed*** and the verbs that are vague as *open*verbs. They convey various meanings to different people. Use closed or specific verbs whenwriting your objectives. See Table 1 for a list of verbs that could be used for stating objectives inthecognitive domain.

Object. The third part of an objective is the ***object*** of the verb. While the verb tells whatyouwant thelearner to do,the object tells him orher, what to do***onwhat***.

Lookatthe followingexamples ofobjectivesthatcontain the3partsmentioned:

1. Afterreadingthelesson ,youwillbebeabletodefinecommunication.
2. Afterthispresentation,youshouldbeableyoutowriteinstructionalobjectives.
3. Attheendofthelesson,thetraineesshouldbeabletousetelevisionasteachingaids.

2.12 TaskAnalysis

Task refers to work to be done in a fixed time period to achieve a goal. The term "task" is oftenused interchangeably with activity or process. Task analysis means breaking down of certainactivity into several small steps to achieve the goal easily.Task analysis often results in ahierarchical representation of what steps it takes to perform a task for which there is a goal andfor which there is some lowest-level "action" or interaction among humans and/or machines: thisisknownasHierarchicalTaskAnalysis.Tasksmaybeidentifiedanddefinedatmultiplelevelsof abstraction as required to support the purpose of the analysis. A **Critical** Task Analysis, forexample, isan analysisof human performancerequirements which, ifnot accomplished inaccordance with system requirements, will likely have adverse effects on cost, system reliability,efficiency, effectiveness,or safety. Taskanalysis isoften performed byhuman factorsandergonomicsprofessionals.

Task analysis may be of manual tasks, such as bricklaying, and be analyzed as time and motionstudies using concepts from industrial engineering. Cognitive task analysis is applied to modernwork environments such as supervisory control where little physical work occurs, but the tasksaremorerelatedtosituationassessment,decisionmaking,andresponseplanningandexecution.[4]

Task analysis isalso used ineducation. It isa model that is applied to classroom tasks todiscover which curriculum components are well matched to the capabilities of students withlearning disabilities and which task modification might be necessary. It discovers which tasks apersonhasn'tmastered,andtheinformationprocessingdemandsoftasksthatareeasyorproblematic. In behavior modification, it is a breakdown of a complex behavioural sequence intosteps.This often servesas the basis for chaining.

The results of task analysis are often represented in task models, which clearly indicate therelationsamongthevarioustasks,AnexamplenotationusedtospecifytaskmodelsisConcurTaskTrees(byFabio Paternò), which isalso supported bytools thatarefreelyavailable.

Inthe field ofEducationtaskanalysisisrelatedto theplanningteachinglearningphase.

I.K. Davies, in his book "The Management of Teaching", has written about the following threeactivities which are to befollowed by the teacher during planning teaching:1. Task Analysis2.IdentificationofTeachingObjectives3.WritingtheTeaching ObjectivesinBehaviouralTerms

1.TaskAnalysis

In task analysis, the activities related to the contents are analysed. If task analysis is not carriedout properly, expectedachievement is not possible. Hence, task analysis has special importance.AccordingtoI.K.Davies, fouractivities areincluded in task-analysis—

(i) Descriptionof activitieswhich aretobe learntbythe pupil.

(ii) Identificationofexpectedbehaviours.

(iii) Identification of those stimuli and conditions with the help of which pupils may showexpectedbehaviours.

(iv) Determination of norms for expected performance or achievement Remember that throughtask analysis, proper decisions are made regarding learning objectives, teaching strategies andtactics.

Taskanalysisis ofthefollowingthreetypes:

(i) ContentAnalysisorTopicAnalysis

(ii) JobAnalysis

(iii) SkillAnalysis

(i) Content Analysis or Topic Analysis: In content analysis, the content or topic is analyzed oneducational and intellectual basis.Inthe wordsofI.K.Davies, "It isthe analysis oftopic or content unit to be taught into its constituents or elements and synthesize intological consequence."Since many techniques are used for content analysis but matrix techniquesof I.K. Davies is considered most useful. According to this technique, content is divided intosub-topics first of all which are meaningful and completely separate from each other. Then, thesesub-topics are psychologically arranged in a sequence. Then, each sub-topic is divided into itselements and arranged in a sequence. It is importantthat each element of the sub-topic ismeaningful, complete and separate from each other like sub-topics of the content are arranged ina sequence on the basis of certain laws and maxims of teaching. Such asi) From simple tocomplex(ii) From known to unknown(iii) From concrete to abstract(iv) From whole to part(v)FromPsychological toLogical. Hence,incontentanalysis,bothactivitiesofanalysisandsynthesisareincluded.Wecanrepresentthecontentanalysis inthethroughI.K.Davies matrixtechnique.

Teachershould follow thefollowingsources topresent thecontent ortopicbyanalysis:

(i) Studyof Standard Text-Book

(ii) KnowledgeofStudent'sNeeds

(iii) UnderstandingEducationalNeeds

(iv) UtilityofTeachingAids

(v) PossibilitiesofExaminationSystem

(ii) Job Analysis: This step is concerned with 'what is to be done in the task.' Hence, in thisphase,physicalandpsychomotoractivities aredetermined andsub-processes areanalyzed.

(iii) SkillAnalysis: Theskillanalysisisthe nextstageofjobanalysis.Inthisstep,itisemphasized how the work isaccomplished. It includes all those tasks which need skill, but theskillanalysis is doneonlyforquestioning and diagnosisactivities

Contentanalysis:

2.13 Designing of Instructionalstrategies-lecture, team teaching, discussion, seminar andtutorial

2.13.1 LectureStrategy

The word *lecture* comes from the Latin word *lectus*, from the 14th century, which translatesroughlyinto–toread.‖Theterm*lecture*, then,inLatin,means–thatwhichisread.‖Itwasn‘t until the 16th century that the word was used to describe oral instruction given by a teacher infrontof an audienceof learners.

In lecture method a teacher tries to present a segment or unit of the desired content material of asubject to a group of learners through lecturing (verbal communication of ideas). It aims to attainthespecificteaching-learningobjectivesrelatedparticularlytothecognitiveandaffectivedomainsofthelearner‘sbehaviors. Thelecturemethod,asanoldesttraditionalmodeofteaching,mayprovequiteadvantageousinsomanyways forthepresentdayclassroomteaching-learning.Themaincriticismlabelledagainsttheuseofitliesinitsfocusingunderstandingand reflectivelevels.

Today, lecturing is a teaching method that involves, primarily, an oral presentation given by aninstructor to a body of students. Many lectures are accompanied by some sort of visual aid, suchas a slideshow, a word document, an image, or a film. Some teachers may even use a whiteboardorachalkboardtoemphasizeimportantpointsintheirlecture,butalecturedoesn‘trequireany of these things in order to qualify as a lecture. As long as there is an authoritative figure (in anygiven context)atthefront ofaroom,deliveringa speechtoa crowd oflisteners,thisisa lecture.

Advantages

- Gives the instructor the chance to expose students to unpublished or not readily availablematerial.
- Allows the instructor to precisely determine the aims, content, organization, pace anddirection of a presentation. In contrast, more student-centered methods, e.g., discussionsor laboratories, require the instructor to deal with unanticipated student ideas, questionsandcomments.
- Canbeusedtoarouseinterestinasubject.

- Cancomplementand clarifytext material.

- Complements certain individual learning preferences. Some students depend upon thestructureprovided byhighlyteacher-centered methods.
- Facilitateslarge-classcommunication.

Disadvantages

- Placesstudentsinapassiveratherthananactiverole,whichhinderslearning.
- Encourages one-way communication; therefore, the lecturer must make a conscious efforttobecomeawareofstudentproblemsandstudentunderstanding ofcontentwithoutverbalfeedback.
- Requires a considerable amount of unguided student time outside of the classroom toenable understanding and long-term retention of content. In contrast, interactive methods(discussion, problem-solving sessions) allow the instructor to influence students whentheyare activelyworking with thematerial.
- Requirestheinstructortohaveorto learneffectivewriting andspeakingskills.

2.13.2 TeamTeachingStrategy

Teamteachinginvolvesagroupofinstructorsworkingpurposefully,regularly,andcooperatively to help a group of students of any age learn. Teachers together set goals for acourse,designasyllabus,prepareindividuallessonplans,teachstudents,andevaluatetheresults. They share insights, argue with one another, and perhaps even challenge students todecidewhichapproach isbetter

Team teaching as an innovation in the field of teaching and learning, aiming to improve itsprocess and products by calling upon the joint cooperative efforts of a team of the personnel(teachers and others) by utilizing the resources available in a given teaching-learning situation, attheproper timeand inaproper way.

Teams can be single-discipline, interdisciplinary, or school-within-a-school teams that meet witha common set of students over an extended period of time. New teachers may be paired withveteranteachers.Innovationsareencouraged,andmodificationsinclasssize,location,andtime

arepermitted.Differentpersonalities,voices,values,andapproachessparkinterest,keepattention, and prevent boredom.The team-teaching approach allows for more interaction betweenteachersand students

In team teaching a group of teachers, working together, plan, conduct, and evaluate the learningactivities for the same group of students. In practice, team teaching has many different formatsbut in general it is a means of organising staff into groups to enhance teaching. Teams generallycomprise staff members who may represent different areas of subject expertise but who share thesame group of students and a common planning period to prepare for the teaching. To facilitatethisprocess a common teachingspaceis desirable.

Teamteachingrequiresproper

- planningwithregards tostaffs,their abilities,specialization
- Goalsetting
- Decidingthetargetgroup,time frame
- Conductingmeeting, responsibilityallocation
- Decidingstrategy, media, method
- Implementationofplan andmediastrategy
- ResourceManagement
- Evaluation
- FeedbackandContinuityofProgrammewithModificationAd

vantages

Team teaching is an approach which involves true team work between two qualified instructorswho, together, make presentations to an audience. The instructional advantages of team teachinginclude:

(1) Lecture-styleinstructioniseliminatedinfavourofadynamicinterplayoftwomindsandpersonalities.
(2) Teachingstaff actasarole modelsfordiscussionand disagreement.
(3) Teamteachingmakeseffectiveuseofexistinghuman resources.

(4) Teamteachinghasthepotentialforrevitalizinginstructionalcapabilitiesthroughaprocessofdialogue.

(5) Interestintraditionalcoursescanbestimulatedasstudentssharetheenthusiasmandintellectualdiscoursethatthe lecturersCommunicate.

(6) Theeffectiveuseof facilitiesispossible.

(7) Teamteachingprovides opportunitiesforinteractionwith theaudience.

Disadvantages

- Teamteachingisnotalwayssuccessful.Someteachersarerigidpersonalitytypesormaybewedded toasingle method.
- Somesimplydislikethe otherteachersontheteam.Somedonotwanttoriskhumiliationanddiscouragement at possible failures.
- Somefeartheywillbeexpectedtodomoreworkforthesamesalary.Othersareunwillingto sharethe spotlight or theirpet ideasorto losetotal control.
- Teamteachingmakesmoredemandsontimeandenergy.Membersmustarrangemutuallyagreeabletimes forplanningand evaluation.
- Discussionscanbedrainingandgroupdecisionstakelonger.
- Rethinkingthecoursesto accommodatetheteam-teachingmethodisofteninconvenient.
- Opposition may also come from students, parents, and administrators who may resistchange of any sort. Some students flourish in a highly structured environment that favorsrepetition.Some are confusedbyconflictingopinions.
- Too much varietymayhinder 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 someclasssizes. Nonprofessional staffmembers could takeoversomeresponsibilities.
- Personalconcernsusuallyexpressedaboutteamteachinginclude:

  - notallteammemberswillcontributeequally;
  - teachersdonot understandhow tomakethe teamwork;
  - therewill bepersonalityconflictsto deal within additionto theteachingitself;

- apreference forworkingalone;

- alltheworkwillfallon theteamleader/seniorsubjectexpert;
- itwillbetoodifficulttocoverall the coursecontent;
- teammeetingswillbea wasteoftime.

2.13.3 DiscussionStrategy

The discussion strategy involves some sort of discussion, i.e. exchange of ideas between studentsand teachers or among a group of students resulting in some learning for the realization of thepredetermined teaching learning objectives. It may prove quite helpful in a number of teaching-learningsituations if handled properlyin anable leadership.

Discussion means to engage in an orderly verbal interchange and to express thoughts on aparticular subject This is the Discussion Method, also called the Socratic Method after theAncientGreekphilosopherSocrates,whowouldengagehisstudentswithquestionsanddialogue. Because the class is small, the tutor is able to determine each student‘s progress, andstudents have ample occasion to make their difficulties known. There is a true meeting of theminds.

The Discussion Method demands that students come to class well prepared. Compelling them tothink out their arguments in advance and to answer their peers‘ questions and counter-arguments,itsharpenstheirpowersofreason,analysis,andarticulation.Itthusprovidesthemwithfunda mentalskills necessaryforsuccess in anydiscipline orprofession.

Discussion methods are a variety of forums for open-ended, collaborative exchange of ideasamong a teacher and students or among students for the purpose of furthering students thinking,learning, problem solving, understanding, or literary appreciation. Participants present multiplepoints of view, respond to the ideas of others, and reflect on their own ideas in an effort to buildtheir knowledge, understanding, or interpretation of the matter at hand. Discussions may occuramong members of a dyad, small group, or whole class and be teacher-led or student-led. Theyfrequently involve discussion of a written text, though discussion can also focus on a problem,issue,ortopicthathasitsbasisina‖text‖inthelargersenseoftheterm(e.g.,adiscipline,the media,asocietalnorm).Othertermsfordiscussionsusedforpedagogicalpurposesare

instructionalconversations(Tharp&Gallimore,1988)andsubstantiveconversations(Newmann,1990
).

A defining feature of discussion is that students have considerable agency in the construction ofknowledge,understanding,orinterpretation.Inotherwords,theyhave considerable–interpretive authority‖ for evaluating the plausibility or validity of participants responses. To illustrate, thefollowing excerpt is taken from a discussion between a teacher and a small-group of second-gradestudents(from Eeds&Wells, 1989). Theyarediscussingthe short story,–Meand Neesie,‖by Eloise Greenfield. The story is about a girl, Janell, and her imaginary friend, Neesie, and theteacherand students aretryingto understand whyNeesie is at schoolwith Janell fortheday.

Advantages:

- emphsisonlearninginsteadofteaching.
- participationbyeveryoneintheclass.
- developmentofdemocraticwayof thinking.
- traininginreflectivethinking.
- traninginself-expression.
- spiritoftoleranceisinculcated.
- learningismadeinteresting.

Disadvantages:

- Discussionmethod isnotappropriate forallthe topics.
- Itcan beused onlyto students who havesomebasic knowledgein thetopic.
- someofthestudentsmayfeelshyorreluctanttotakepartwhileothersmaytrytodominate
- Teachermaylosecontrolover thestudents and theymayend up in quarelling.

2.13.4 SeminarStrategy

Seminarisaninstructionalstrategywhichinvolvespaperreadingfollowedbygroupdiscussiontoclarifyt hecomplexaspectsoftheme. Seminargeneratesasituationforagrouptohaveguided

interaction among themselves on a theme which is generally presented to group by one or moremembers.Participantswhopresentthethemeshouldstudythethemethoroughlytomakeselection of relevant material. Collected material is presented in the form of paper. It is circulatedamongtheparticipantsinadvance.Itprovidesthestructureoftheme,tofacilitiesitscommunication.

A seminar is an advanced group technique which is usually used in higher education. It is aninstructional technique it involves generating a situation for a group to have a guidedinteractionamongthemselves on atheme.It refers to astructuredgroupdiscussionwhat usually follows a formal lecture or lectures oftenin the form of an essay or a paperpresentationon atheme.

Principles

Seminar is a form of a class organization that utilizes a scientific approach for the analysis of aproblem chosen for discussion. It is a discussion method of teaching where an informal group of10-15 (not more than 25) learners participate to solve problems in a scientific approach andanalysis.It is an organized, guided discussion with a focus on the discovery of new relationshipby the participating individuals. • It differs from intellectual initiative.The student plays anactive role in seminar. The objective of the seminar is to give students opportunity to participateinmethodsofscientificanalysisandresearchprocedures.Studentsareexpectedtodoconsiderablelibrarysearch priorto theseminar.

A seminar group is mainly concerned with academic matters rather than individual students andcommonly involves the reading of an essay or paper by one group memberfollowed by adiscussion by the totoal group on the topic. The role of a teacher is to help students to select,formulateandresolvethemostsignificantproblemsandsuggesttheavailablesourcesofinformation. As the seminar progresses, the students assume greater responsibility for addressingtheproblems and conductingdiscussion.

FeaturesofSeminar

• Teacheristheleader.

• The group generallyconsistsof 10to 15participants

.•Anidealseminarlastsfor1-2hrs.Thetopicisinitiallypresentedbythepresenterfollowedbygroupdiscussion.

• Theleadershouldkeepthediscussionwithinlimitssothefocusofdiscussioncanbementioned.

• Careshouldbetakento avoidstereotypes.

• Instudentseminars,studentspresenttheirdatainaninformalwayundertheleadershipoftheteacher,followed byateacher monitored discussion.

• Allmemberstakepartindiscussion inaninformal butorderlymanner.

• The chairman should be skilled in encouraging the timid participants. • A student secretary mayrecordtheproblems thatcome up andthe solutions given to them.

Organizingaseminar

• Definethepurposeof theseminar.

• Relatethe topicofseminarand discussion tothemainconcept or theobjectives tobeattained.

• Directand focusonthe discussiontopic.

• Helpstudentstoexpresstheirideasandkeepthediscussionatahighlevelofinterestsothatthestudents listen attentivelyto thosewhocontribute theideaas.

• Plancommentsandquestionsthatrelatetothesubjectandalsoguideanddirectthediscussion.
• Settimelimitationsforeachperson'scontribution.

• Guardagainstmonopolyofthediscussionbyanymemberoftheseminar.•Planforsummaryat intervals during the discussion and also at the end of the discussion and relate the ideasexpressedto the purposeofdiscussion.

• Have the discussion recorded by a student as a recording secretary or by tape recording. • Planforteacher and studentself evaluationof theprogress madetowards theimmediate objectives.

RoleofATeacher

• Selectthetopic.(Givereasonabletimeforpreparation).

• Remaininthebackgroundintheseminar,butsitwherethe whole group canbeseen.

• Preparetohelpout intheinitialstagesofusingthismethodin caseoflongsilence.

• Besurethatessentialpointsarenotoverlookedandthatgrossinadequaciesarecorrected(preferablybyt he othermembers ofthe class).

• Makesurethatallmembershaveashareinthediscussionandthatirrelevantdiscussionisavoided.

Advantages

• Studentplaysanactiverole;itpresupposesthat thestudenthasbackgroungknowledge.

• A properly conducted seminar has potentials to teach students the method of scientific analysisandtechnique or research.

• Individual student and the group as a whole try to solve the problem. • Exchange of facts andeffortsto crystallize groupopinion is aclearadvantagein seminar method.

• The problem solving skills of the students are sharpned by participation. • The students developvocabulary, articulation, problem solving and critical thinking skills as they participate in theseminar.

• A seminar helps in self learning and promotes independent thinking. • Ability to see ownproblemsisincreasedbecauseofpersonal difficultiescanbecomparedwith thoseofthe group.

• Skillfullydirectedseminar promotesgroupspiritandco-operativeness.

Disadvantages

• Seminarisatimeconsumingprocess.

• Itcannotbeappliedto newstudents.

• Timid students mayinitiallyfeel nervous.

• Ifsubjectknowledgeispoor,unnecessarydiscussionsarise.

• Theapproachtoproblemsolvingextendstostudent'sprofessionalandpersonalactivities.

2.13.5 TutorialMethod

The tutorial method help in supplementing or enriching the traditional classroom instruction bycalling up on a tutor to provide his personalized and individualized services to a student or asmallgroupofstudents-tutees fortheirrequired betterment.

A tutorial is either a one-on-one session between a teacher and a student, or a very small group(three or four) of students and an instructor, where the learners are at least as active in discussionandpresentationofideasastheteacher.Itisthefollowupstudyoflecture.ItishighlyIndividualized remedial teaching. It is based on principles of individual difference and remedialteaching.It involves steps such as

- Diagnosis
- Prescription
- Followup

To remove this drawback of group-teaching, pupils are divided into small groups so that thepersonal problems which came across during group teaching may be solved successfully. Hence,a tutorial is a sub-part of the class in which a teacher tries to solve the problems of the smallgroupsof thepupils throughindividual teaching.Tutorials areof threetypes :

1. GroupTutorial

2. SupervisedTutorial

3. PracticalTutorial.

*1. GroupTutorial:*GroupTutorialsareconductedtosolvetheproblemsofthegrownuppupilsofaveragelevel.Itshouldberememberedthatthegrouptutorialscanonlybeorganized

successfully by a teacher who possesses the full knowledge of Group Dynamics and SocialPsychology.

2. Supervised Tutorial: In the supervised tutorials, the talented pupils and the teachers discuss theproblems time to time. The pupils put up their difficulties. Then the teacher tries to solve thoseproblems. In this way, after a discussion between a teacher and the pupils, the solutions to someproblemscomeup.

3. Practical Tutorial:Practical tutorials are conducted to develop the physical skill and toachieve the objectives of psychomotor skill. Pupils have to work in the laboratory for this. Suchtutorials are more useful for younger and pupils of lower-classes. Some people consider theteacher as primary and pupils as secondary in conducting the tutorials. In such a situation, if atutorialacquirestheformofalecture,thenthiswillbeconsideredasautocraticstrategy.Contrary to this, if the pupils are more active instead of the teacher, then it will definitely occupyits main place in democratic strategies. Prof. Bloom's view is that the discussion should be basedonthe problem andthe teacher shouldhelp thepupil tothemaximum tosolvethe problem

2.13 Letus Sumup

In this unit you were introduced with the concept of communication with its theory, models,process, elements and importance. You have also explored different types of communicationincluding verbal and non verbal.. You found the way you should adopt for communicating inclassroom situation. To make education global it is important to use mass media communication.You have also got an idea about how to design instruction with instructional objectives, taskanalysis and instructional strategies such as lecture, team teaching, tutorial teaching and seminar.Youalsogotadetailideaabouthoweffectivestrategiescanbeplannedwitheffectivecommunication. We expect that you will follow the theory of effective communication in yourdayto dayclassroom operation.

2.14References

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I.

UNIT-III -TeachingLevels,StrategiesandModels

Structure

3.0 Introduction

3.1 Objectives

3.2 TeachingLevels

3.2 TeachingStrategies

3.3 TeachingModels

3.4 ModificationofBehavior

3.5 Let us Sumup

3.6 References

3.0 Introduction

In the last unit we have discussed about the communication process and how teacher can use itfor effective instruction. However for proper learning on the part of learner it is essential to haveeffective teaching. Teaching is not aneasier task. To understand the teaching process it isimportant to comprehend several levels, strategies and models of teaching. These attributes ofteaching are the basiccriteria for designing toolsof educationaltechnology.Sothatasaneducational technologistyou canbe able to develop software basingon these theories andstrategiesforeffectivelearning

3.1 Objectives

Afterstudyingthisunityouwill beable to

- Defineteachingleveland teachingstrategy
- Explainteachinglevel

- Classifyteachingmodels
- Applytechnique to modifybehavior ofteachers.

3.2 TeachingLevels

Teaching is a purposeful process which has close relationship with learning. Therefore, in themodern age, teaching-learning are accepted as one concept. Remember that the content has itsown nature by which various learning levels can be effected with the acquisition of variousteaching objectives. It is to be observed that a teacher can present the contentat three levels,fromthoughtless to thoughtful situations. Theselevels are—

1. Memory

level2.Understandingl

evel,

3.Reflectivelevel.

It depends upon the teacher's competency that to what extent he succeeds in reaching uptoreflective level starting from memory level on the basis of his efficiency and experiences. It is acommon observation that the normal teaching corresponds to the memory level teaching. Suchlearned and efficient teachers who succeed in upgrading their teaching from memory level toreflectivelevel-teachingarelacking

3.21 MemoryLevel

Memory is a mental process which occurs essentially in some quantity in every living being.Actually, when a person sees some object, thing or place, then the image of the object, thing or aplace are formed in his mind. To memorize these pre-learnt things is called memory. We recallthese accumulated past experiences when required and were cognize them by bringing them intoour conscious mind, then that is called memory. Ideas of following scholars make clear themeaning of memory: Woodworth—"Memory is the direct use of what is learned."J.S. Ross—"Amemory is a new experience determined by the dispositions laid down by a previous experience,therelationbetweenthetwobeingclearlyapprehended."Mcdougall—"Memoryimpliesimaginingofeventsasexperiencedinthepastandrecognizingthemtoone'sownpast

experience."Stout—"Memoryistheidealrevivalinwhich theobjectsofpastexperiencereinstateasfaras possiblein theorder andmanner of theoriginal occurrence.

Thefollowing arethephases of memory:

(i) Learning. Memory depends upon the experiences. Hence, the first phase of memory is thelearning of some facts. Learning task is done by the conscious mind. In this phase, the life-experiences get stays in the brain in the form of mental impressions and these can be madeconscious as and when needed. Hence, the pupils should acquire direct knowledge. Repeat itagainandagain.Theyshouldsearchoutthemeaningofthatknowledge.Memorizethatknowledgebylinkingitwithotherobjects or subjects.

(ii) Retention. To make the contents permanent in the minds is called retention. Remember thatthe retention power occurs differently in the different individuals. A memory is said to be good ifa person can retain something in his mind for a longer duration. The pupils and adolescents havemore retention power as compared to the adults. It is for this reason that they memorize rapidly.In the opinion of psychologists, the retention power reaches at its peak at the age of 25 years andafterthisitstartsreducing.Remember thattheretentionpowerdependsmainly uponfourconditions,which are—(i)brain, (ii) health,(iii) interest, and (iv) thinking

Every experience learns impressions in the brain. Our brain not only protects these impressions,but also arranges them ina sequence. Retentionpower is also closely related to the structure ofthe brain. Due to the differences in the structure of the brain of every person, variations in theretention power occur. Physical health is also deeply related to the retention power. Our nervoustissues function very conveniently when wehave sound health. Consequently, we learn anythingvery easily. It is the reason that in the morning, i.e. with complete sound health, when we learnsomething,itgetsmemorizedveryrapidly.Itistheonlyreasonthatournervoustissuesdon'twork properly when we have ill-health. Hence, our retention power lowers down. Retentionpower is also related to the interest and thinking. We remember rapidly in whichwe haveinterest.Duetoourinterest,wethinkaboutthatthingagainandagainandweestablishrelationshipwith otherthings resultingin our rapidlearning.

(iii) Recall. The learnt experiences when brought to conscious mind is called recall. Recalling ofpast experiences is responsible for a person's good or bad memory. If he fails to recall whenneeded all goes in vain even in spite of his superb learning. When a person fails to recall theretained material, that enhances the chances of forgetting. Psychologists have emphasized oncertainlawsinordertobringlearntmaterialattheconsciouslevel.TheselawsareLawof Contiguity,LawofSimilarity,LawofContrast,LawofContinuityofInterest,LawofPrimacy, Law of Regency, Law of Frequency, Law of Vividness.(iv) Recognition. If we see anobject or a person and we can say that we have seen before that object or a person is termed asrecognition.Inotherwords,recognitionisthatmentalprocessbywhichwecantell,bycomingin contact with an object or a person what a thing is, who is the person and when we wereintroduced? Remember that the recall and recognition have the similar relationship as that ofbrain and the body. Recalling becomes difficult when the association among objects does notoccur and consequently we are unable to remember them. Contrary to this, we recognize themquicklywhen ourassociation amongthose objectsandpersons becomes strong.

Characteristicsof goodmemoryareasfollows:

(i) RapidityinLearning.Thefirstcharacteristicofgoodcharacteristicisitsrapidityandsimplicityin learning.Hence, thememoryofthosepupilscan besaid asgoodwho learnrapidly.

(ii) Stability of Retention. Another characteristic of good memory is retention of learnt materialfor a longer duration. The pupils are said to have a good memory if they retain for a longer timewhat theyhavelearnt.

(iii) RapidityinRecall.Inadditiontorapidlearningandstabilityofretention,thethirdcharacteristic of good memory is rapidity in recall. Those pupils are said to have good memorywho can bring anything to their conscious level very rapidly. Only those pupils are said to havegoodmemorywho canrecall anythingaccordingto theneedsandat propertime.

(ivServiceableness.Thefourthcharacteristicofgoodmemoryisitsscoreabilityatsomeoccasion. There are some pupils who possess much but when needed, they remember onlyirrelevant material. Contrary to this, there is no dearth of the pupils who bring only desirable attheconsciouslevel.Onlythosepupilsaresaidtohavegoodmemorywhocanrecalltheappropriatemater ial accordingto theneed.

(v) Forgetting Irrelevant Things. A good memory requires forgetting of irrelevant things. Therecalling of irrelevant things at the time of examination does not benefit the pupils. Similarly,recallingthe painfulevents of lifestruggle does notproveadvantageous in anyway

Persons differ in ability to memorize. Some persons don't forget after a single reading. Contraryto this, people forget frequently even after repeated learning. On the basis of their differentabilitiesmemorycan beclassified as follows:

1. ImmediateMemory.Immediatememoryisthatwhenapersonrecallimmediatelyafterlearningsome thing. Thistypeof memoryhas thefollowingtwo characteristics—

(a) Itistemporary.It ispossiblethat thelearntmaterialmaynotretainfor alongerperiod,

(b) Its development occurs along with age. In an infancy period, the development of the pupil isslowandsomewhatfasterduringchildhood.Duringadolescence,thisrateofdevelopmentacquiresits maximum limits.

2. PersonalMemory.Whilerecallingpastexperiences,werememberourpersonalpastexperiences.

3. Permanent Memory. The recalling of learnt material for a longer time is known as permanentmemory. In other words ,the things with which our association is strong, are remembered for alongerduration.

4. Logical Memory. To learn something by using intellect and its recalling when needed is calledlogicalmemory.Burgsonhas termedthis memoryas truememory.

5. Rote Memory. Rote memory is that memory in which the facts are crammed without anyunderstanding.Suchtypeof memoryisverysharpduringchildhood.Itisthereasonthatcounting and tables etc. are crammed very rapidly. However ,the memory is not considered asverygood memory

.6. Mechanical Memory.Mechanical memory isalso known as physical memory.When ourbody becomes habitual of doing any task repeatedly, then our body has no need to recall that taskagainand again. Forexample, aswimmerswimswithout anymajor recalling.

7. ActiveMemory.Therecallingofpastexperiencesneedssomeefforts,forexamplethecandidates sitting in examination hall have to make efforts to recall the answer to the questionsagainand again

8. PassiveMemory.Inpassivememory, werecall thepastexperienceswithoutanyeffort

.9. Impressional Memory. The recalling of the material learnt from the books and companions iscalledimpersonal memory.Thereisnoplaceofpersonalexperiencesinsuchtypesofmemories

Inreality,there isa definite pattern of memory levelteaching.Inthistype of teaching,theteacher is like a dictator who suppresses the independence, interests, attitudes and competenciesof the pupils and tries to impose the facts and information upon the pupils. Hence, in this level ofteaching, the teacher remains active but the pupils go on learning by heart in strict discipline as apassive listener. In short, no inter-action occur between the teacher and the pupils. In the memorylevel teaching, signal learning, chain learning and stimulus-response learning are emphasized. Inthe end, both essay type and objective type examinations are used to evaluate the learnt contents.The above description shows that the memory level teaching is teacher-centered. Pupils havesecondary place in this level of teaching. As a result, the teacher goes on imposing facts andinformation externally by keeping them in the strict discipline in order to develop the pupilsmentally,neglectingtheirinterest,attitudes,abilitiesandneeds.Thismakesthepupilsascrammers but they can not be an intelligent learned person. The teaching of this level has themaximum level of motivation. The evaluation of the acquired knowledge is done by traditionalmethods.Inspiteofmanydrawbacks,thememorylevelofteachinghassomespecialimportan ce.Itsreasonisthattheteachingatunderstandingandreflectivelevelscanbesuccessful only when the teaching at memory level occurs. In other words, understanding andreflective level teaching cannot take place unless and until memory level teaching has not beenmanaged

ModelofMemoryLevelof Teaching

Herbart is considered exponent of memory-level teaching. He has described the followingstepswhile presentingthe model ofmemorylevel teaching:

(a) Focus: According to Herbart, the focus of memory level teaching is the emphasis oncrammingof facts and development of the followingcapacities—

(i) Trainingofmentalaspects.

(ii) Providingknowledge offacts.

(iii) Retainingthe learntfacts.

(iv) Recallingand re-presentingthelearnt facts.

(b) Syntax: Herbart hasdivided the memory level-teaching into five steps which are knownasHerbart'sFiveFormulaSteps.Byfollowingthesefivesteps,theteachercancreatelearning situations for memory-level teaching.The following is the sequence of Herbart'sfivesteps—

(i)(a)Preparation,

(b)Statement ofAim

.(ii)Presentation

(iii) ComparisonofAssociation.

(iv) Generalizations.

(v) Application.

(i) (a)Preparation.Preparationisthefirststepofteachingmethod.Inthisstep,somequestions are asked to test the previous knowledge of pupils so that the curiosity to learn newknowledge may be aroused in them. In other words, in this step, the pupils are prepared toacquirenew knowledgebytestingtheirprevious knowledge.

(b) Statement of Aim. This step is the part of the first step. Here the topic becomes clearer tothepupils and the teacherhimselfwrites the topicon theblack-board.

(ii) Presentation. In this step, the lesson is developed with the help of the pupils. In otherwords,bystimulatingtheirmentalactivity,thepupilsareprovidedwithopportunitiesfor

self-learning. The teacher tries to derive most of the information from the pupils so that arelationshipmaybeestablishedbetweenthe new and theprevious knowledge.

(iii) Comparison and Association. Herbart has named this step as association. Here, themutualrelationshipisestablishedamongfacts,eventsandexperimentsbycomparisonswhichcla rifies the learning material in the minds of the pupils. Hence, the teacher shouldestablish a relationship between two subjects and between the facts and events of one subjectand other facts and events of the same subject and make their comparison so that the newknowledgemaybeclarified andmadepermanent in the minds of the pupils.

(iv) Generalization. Herbart named this step as a system. After explaining the basic lesson,the pupils are given the opportunities to think in this lesson. After this, they formulate somesuchprinciples and lawswhich can beusedin thefuturelifesituations.

(v) Application. It is the last step of teaching. In this step it is observed whether the newlearnt knowledge can be used in new situations or not. This can be verified by the principlethrough questioning or he can provide new opportunities to make use of learnt knowledge.This makes the knowledge permanent and the laws can be verified.(c) Social System: Theprocessof teachingis social andprofessional. Themembers ofthissocial system are—

(i) pupil,and

(ii) theteacher.

Atthislevel,the behavioroftheteacherisdominatingbaseduponthedictatorialandauthoritarian tendencies. As a result of this, the pupil functions as a passive listener. Hence,thefunction ofthe teacher is—

(i) presentingthecontents,

(ii) controllingthepupils'activities,and

(iii) providing motivation to them. All the activities are performed by the teacher and thepupilsfollow considering themideal.(d) SupportSystem:Intheexaminationsystemofmemory-level teaching, cramming is stressed.

Hence, while evaluating the teaching of thislevel,bothoralandwrittenexaminationsareused.Rememberthatwhiletheteachingofthis

levelisevaluated,essaytypeexaminationisconsideredmoreuseful,butthestepslikerecallandrecognition arealsousedsuccessfullythroughthe objectivetypeexamination.

Guidelines

Memorylevelteachingprovideshelptotheteachingatunderstandingandreflectivelevelsononeside whileitprovidessisforthesuccessofthesetwo.Hence,thefollowingsuggestionsarebeinggivento makethememory-levelteaching effective—

(i)Theteachershould tryto achievethecognitiveobjective

.(ii)Thecontent tobe presented shouldbe purposeful.

(iii) Theteachingpointsshould bepresentedas a wholeorin toto.

(iv) Thecontent shouldbepresented ina sequence

v)Thereshould beno teachingwhen thepupils aretired.

(vi) Onlywhole-methodshould beused.

(vii) Adefinite reinforcement systemshould beused

.(viii)Recallshouldbegrownthroughpractice.

(ix)Recapitulationshouldbedoneinarhythm.

3.22 UnderstandingLevel

Remember that in the understanding level of teaching, the teacher tries to present his instructionsand stresses to make understand to the pupils the generalizations, principles andfacts. It resultsin turning the teaching thoughtful. In other words, in understanding-level teaching, the teachertries to provide more and more opportunities to develop the intellectual behaviors of the pupils.This develops the essential competencies for generalizations, insight andsolving the problems.In this way, both pupils and teachers participate in developing the lesson while teaching occurs attheunderstandinglevel.

Models

The model of understanding-level teaching was indoctrinated by Morrison. Hence, it is named asMorrison's Teaching Model. Morrison has described the structure of this model in the followingfoursteps—

(a) Focus. According to Morrison, the focus or objective of the understanding-level teachingmodel is that the pupil should achieve the mastery of the concept. In other words, the teacherstresses upon the mastery of the content so that a desirable change may occur in he personality ofthe pupils.

(b) Syntax. Morrison has divided the syntax of understanding-level teaching in to five steps and ateacher can create teaching and learning situations following them. The order of five steps of thismodel isas follows—

(i) Exploration:Morrison has includedthefollowingactivities under this step—

(a) Previous knowledgetestingbyquestioning.

(b) Analysing the contents, the elements are arranged in a logical sequence from psychologicalpointof view.

(c) Determininghow the units ofcontents or new knowledgeshouldbepresented.

(ii) Presentation:Atthisstage,theteacherremainsmoreactive.Heperformsthefollowingactivitiesfort he presentation of thecontents—

(a) Theteacherpresentsthecontentinsmallunits.Also,hetriestomaintainthesequenceoftheseunits andarelationship withthe pupils establishes.

(b) Whilepresentingthecontents,theteacheralsodiagnoseswhetherthecontentshavebeenunderstood bythepupilsornot.If not, howmanypupils could not acquirethis understanding.

(c) Theteacherrecapitulatesthecontentstillmostofthepupilsacquiretheunderstanding.

(iii) Assimilation: After presenting the contents, the teacherreaches at the conclusion that mostofthepupilshavegainedthenewknowledge,heprovidespupilsopportunitiesforassimilation.Ithas thefollowingcharacteristics—

(a) The pupils are provided with occasions for generalization through assimilation sothat theyget themasteryof theconcept.

(b) Assimilation-opportunitiesareprovidedin ordertostress uponthedepth ofthecontent.

(c) At the time of assimilation, every pupil studies in accordance with his requirement. Hence,theteacher should providemaximum opportunitiesofperformingindividual activities.

(d) Inassimilation,thepupilsworkthemselvesinlaboratoriesandlibraries.Hence,homeassignmentsar ealsogiven

.(e) In the assimilation period, supervised study occurs. During this period, both pupils and theteachersremain active. The pupils perform individual activities and the teachers guide themaccordingto theneed duringsupervision.

(f) During the assimilation period, the teacher tests whether the pupils have achieved masteryover the contents or not. If this does not happen, the teacher should provide re-opportunities forassimilationafterobservingprecautions duringsupervision.

(iv) Organization: The period of assimilation is of mastery test. After succeeding in the masterytest, the pupils enter the period of organization or recitation according to the nature of contents.According to Morrison, during organization, the pupils are provided with the occasions for re-presentation. All the pupils write contents in their own language. From this, the teacher comes tothe conclusion whether the pupils can write the contents without anybody's help or not. Hence,thepupils enterinto recitation ratherto theorganization.

(v) Recitation: Recitation is the last step of understanding level teaching. During this period, thepupilspresent thecontents orallybeforetheteacher and his mates

.(c) Social System. In the understanding level of teaching, the various steps of social system goon changing.Inpresentation, the teachercontrols the behavior of the pupils like memory-levelby keeping himself more active and heal so provides necessary motivation. In assimilation-period, both pupils and the teacher remain active. The teacher imparts necessary instructions tothepupils theywork themselves with full involvement.

(d) Support System. In understanding-level teaching, the support system does not remain static,but it goes on changing.The pupils have to pass the examination of presentation in order toperform experiment in assimilation. Similarly, theyhave to pass assimilation test essentially fortheir entry into organization and recitation. At the end of organization period,a written test takesplace. Similarly, recitation is followed by an oral test. Hence, both oral and written tests (essaytypeandobjectivetype)occurduringthevarious steps ofunderstanding-level of teaching.

Features.

Thefollowingarethelimitationsandcharacteristicsofunderstanding-levelmodelgivenbyMorrison—

(i) Themain problemof this teachingsystemis itsstress upon themasteryof the content. Humanbehaviour isover-looked.

(ii) Morrisonhasconsideredteacher'sinvolvementinthecontentasmotivationforthepupils,whilepsychological motivationcan provemoreeffective.

(iii) Masteryofthecontentsrestrictsthedevelopmenttothecognitive aspectonlyanditdoesnothelpin developingaffectiveand psychomotoraspects.

(iv) Psychologically,thismodelofteachinggiven byMorrisonisconsideredmoreeffective.

(v) Withtheteachingmodel,adeepstudyofthecontentscanbecarriedoutbythepupils.Hence,this modelcausescompletelearning.

Guidelines

Morrisonhasprovidedthefollowingsuggestionstomaketheunderstandinglevelofteachingmoreeffective:

(i) Thepupilsshouldbeallowedtoentertheunderstandinglevelofteachingunlessanduntiltheypass out the tests of memory-level teaching.

(ii) Everystep ofunderstandinglevel of teachingshould befollowed in a proper sequence

.(iii) The pupils should be promoted to the new step unless they pass the tests of previous stage.Forexample,pupilsshouldbeallowedtoenterassimilationwhentheypassthetestsofpresentation.

(iv) The teacher should provide psychological motivation from time to time in spite of hisinvolvementinthecontent.Alsoheshouldraisetheaspirationlevelofthepupils.

(v) The teacher should make efforts for solving the problems related to understanding level ofteaching.

3.23 Reflectivelevelsofteaching

Remember that the reflective-level teaching means 'problem centered' teaching. In this, the class-room environment is open sufficiently. The teacher creates such a problem before the pupilswhich arouses so much mental tension in the pupils that they start solving their problems byformulating and testing their hypothesis as a result of their own motivation and activeness. Atlast,atimecomeswhentheproblemissolved.Inshort,theteachingofreflectivelevelcooperatesindeveloping creativecapacitiesbyprovidingpupilswiththeopportunitiesofdeveloping intellectual behaviour. The real situation is that the human life is a struggle. He has todo his best for achieving his aims of life. Sometimes,the achievementof the aims occurs,without any obstruction, in a natural way. But sometime, human beings have to face numerousobstacles in order to achieve his aims. From this point of view, the provision of the teaching ofreflective level is essential for the pupils. It is this teaching level which develops the reflectivepower of the pupils. As this power develops when they grow up, they can solve their problems oflife by reasoning, logic and imagination and they can lead successful and happy life. M.L. Biggehas rightly written about reflective level of teaching while clarifying it, "Reflective-level ofteaching tends to develop the class-room atmosphere which is more alive and exciting, morecritical and penetrating and more open to fresh and original thinking. Furthermore, the type ofenquiry pursued by a reflective class tends to be more rigorous and work producing than pursuedatan understandinglearningsituation.

Model

ThecreditgoestoHuntfordevelopingreflectivelevelofteaching.Therefore,thisteachingmodel is named as Hunt'sModel of Teaching. Hunt has described the structure of reflective levelmodel in thefollowingsteps—

(a) Focus.Thereflective level ofteachinghasthefollowingthreeobjectives—

(i) To develop problem-solvingcompetencyamongthe pupils.

(ii) To develop critical and constructive thinking among pupils.

(iii) Todevelopindependentandoriginalthinkingpoweramongthe pupils.

(b) Syntax.Thesyntaxofreflectivelevelteachingisdesignedinthefollowingfoursteps,keepingin mind theindividualand social nature—

(i) Inthefirststep,theteacher createsaproblematicsituationbeforethe pupils.

(ii) In the second step, pupils formulate hypotheses for testing. Remember that more than onehypotheses maybeformulated forthe solution ofaproblem.

(iii) In the third step, to verify the hypotheses, pupils collect data. On the basis of these collecteddata,it is decided whetherthesehypotheses mayhelp in the solution of theproblem ornot .(iv)In the fourthstep, hypotheses are tested. Results are derived on the basisof these testswhichareoriginal ideasof the pupils.

(c) Social System. In the reflective level of teaching, the classroom environment is open andindependent. In such environment, the pupil occupies primary places and the teacher's place issecondary.At the stage, theteacher hasthreemainfunctions—

(i)To presentsomeproblembeforethepupils

.(ii)To usediscussion and seminarduringteaching.

(iii) To raise the level of aspiration of the pupils. All the pupils become active and sensitive forsolvingtheproblem.Hence,atthislevel,bothself-motivationofthepupilandthesocialmotivation have importance.(d) Support System. For reflective level of teaching, objective typetests are not useful. The proper evaluation of the pupils' competencies can be done correctly byeasytypetests. Whileexaminingreflectinglevel—

(i) theattitudes andbeliefs ofthe pupilsshould beevaluated,

(ii) theirinvolvementin thelearningactivities shouldbeevaluated

,(iii) it should be evaluated that how much development of the critical and creative competenciesofthe pupils havetakenplace

Features

Thefollowingarethelimitationsandcharacteristicsofreflectivelevelofteachingasdescribedby Hunt

:(i)Inreflectivelevelofteaching,nodefiniteprogrammeisfollowedasinthecaseofmemoryandunderstanding levels of teaching

.(ii)Thislevelofteachingisrequiredforthepupilsofhigherclasses.Itisbecausethislevelofteachingcarries much importanceforageand maturation.

(iii) The teaching at reflective level is problem-centered.
(iv) Inthislevelofteaching,onlygroup-discussionmethodisconsideredeffective.

(v) Reflectivelevelofteachingcannotberestrictedonlytothecurriculum,contentsandtext-books

.(vi)Inthereflectivelevelofteaching,pupilscan

criticizetheirteachersopenly.Guidelines

Hunthaspresentedthefollowingsuggestionstomakethereflectivelevelofteachingmoreeffective—

(i) Teachershouldallowthosepupils'entryintothereflectivelevelofteachingwhosucceedinthetests of memoryandunderstandinglevels of teaching.

(ii) Inthereflectivelevelofteaching,theteachershouldfollowallthefourstepsofhislevelobservingthep recautions.

(iii) Theteachershouldraisethelevelofaspirationofthepupilstomaketheteachingatreflectivelevel a success.

(iv) Inordertoeliminatetheweaknessesoftheteacher,cognitivefieldpsychologyshouldbestressed.

(v) Theteachershouldcreatesuchproblematicsituationsbeforethepupilsinwhichoriginalandcreativet hinkingmaydevelop in them.

(vi) Atthetimeofteaching,thereshouldbeafreeandopenenvironmentsothatthepupilsmayparticipatea ctivelyin discussionin order to solvethe problem.

(vii) Theteachershouldpresenttheproblembeforethepupilssothattheymayformulatethehypothesesa fter realizingthe problem

3.3TeachingStrategies

TeachingStrategiesisaphraseusedtoindicateapplicationsofvariousmethodsandtechniquesofteachin gtoachievetheobjectiveofteachinginagivensituation.Therefore,theteacherhasto

decide which one or combination of more methods and techniques of teaching need practicalapplication in a given situation. These strategies may be defined as "Broad Method Instruction‖.Remember that there is a lot of difference between a method and a technique. Teaching methodsare directly linked with teaching objectives. Hence, each teaching method decides the directionand speed of the teaching. Contrary to this, the teaching technique is not directly linked with theteaching objective, but it is linked with the teaching method. In spite of this, in teaching method,the feeling of "how" works, but the main spirit of teaching technique is—"with what‖. Not onlythis, teaching method also emphasizes proper and systematic planning of the content, whiletechniqueemphasizespsychologicalandlogicalaspectandhintsthosewaysby whichtheteachingcan bemadeimpressive

3.31 Meaning

According to the Collin's English Gem Dictionary, 1968 the strategy means the art of war or theskill of war. In Encyclopaedia too, its meaning has been given as an art of deploying army so thata specificgoal can be achieved. Henceaccording to Encyclopaedia, "Strategy is the science orart of planning and directing large military movementsandoperations".It is very clear that thestrategy is such planning or line of action which is related to the working system. In other words,strategy is that skilful planning of a working system by which the objective can be achievedconveniently. Remember thatthe strategies are never the same. These change according to thechanging situations.Thewordstrategy isalsobeing used by the socialscientistsin socialplanning, human dynamics and teaching areas B.O.Smith writes about strategy as, "The termstrategy refers to pattern of acts that serve to attain certain outcomes and to guard against certainothers. It is clear that the word strategy means the determination of some policy by planningbefore presenting the contents with the help of which the student's force is faced and the teachingobjectives are achieved."Inthis way, the pre-planning of the lesson is keyto success.Hence, every teacher should beskilled inthis art ofpre-planning. Making clearer themeaning of strategy, Stones &Morris have written that, "Teaching strategy is a generalized planfor a lesson which includes structure, desired learner behavior in terms of goals, instruction andan outline of planned tactics necessary to implement the strategy."Attention should be paid thatthe teaching strategies are more comprehensive than the teaching methods. It is because theteachingmethodsincludeonlythepresentationofcontents.Contrarytothis,teachingstrategy

includes all the aspect like contents, task analysis, teaching objectives, the expected changes inthe behavior of the pupils their interests, attitudes, capacities, abilities, needs, mental level andentering behavior etc. In the words of I.K. Davis "Strategies are broad methods of teaching".Theirconstructionincludeseducationalphilosophy,teachingobjectives,learningprinciples, desiredactivities, feedback and motivatingtactics

3.32 Nature

Thenatureofteachingstrategiesisas follows:

- Teachingstrategyexist for specifyingthe teachinga particular lesson
- Teachingof lesson directed toachieveaset ofteachinglearningobjectives.
- Ithelpsthelearnertorealizerequiredlearningobjectives.
- It brings out a scheme, some programme or teaching learning structure which if followedmaybringout better achievement ofobjectives.
- \Teachingstrategyrequiresanumberofwellplannedtactisforitseffectiveimplementation.Henceteachingtacticsareimportantcomponentasofteachingstrategies.
- It can be modified on the basis of learner‘s feedbacks and changed teaching – learningobjectives.
- Itassumes teachingasscienceand quitetechniqualbynature
- Teachingstrategyis broad, comprehensiveand flexiblebynature.

3.33 Functions

Thefunctions of teachingstrategies areas follows:

- Teachingstrategiesfunction asameanto realizeteachinglearningobjectives.
- Ithelpstheteacherand learnerto maketeachinglearningsimplerandconcretize.
- Itbuildstheteachinglearningenvironmentbyanalyzingandidentifyingthelearningresources.
- Itorientthelearnerto designteachingdevices,teachingtacticandteachingmethods.
- Ithelpstoeliminateobstacleandproblemsinthewayofeffectiveteachinglearningprocess.

3.4ModelsofTeaching

Teaching models act as the basis for the indoctrination of teaching theories and, thus, consideredas hypothesis for teaching theories, therefore, teaching model contribute to make the teachingeffective and interesting because development of teaching models is brought about by keeping inview the learning theories so that the teaching theories may be indoctrinated by using theselearning theories.Inthisway,theteaching modelsare the basisandthe firststepfortheindoctrination of the theory of teaching. In every model, such situations are created in which aninteraction of pupils occurs causing the achievement of the objective by bringing about changesin the behavior. It is to be observed that in each teaching model, a comprehensive and specificoutline of teaching is prepared. Its principles are based upon the verified results. In teachingmodels,thefollowingsixactivities areincluded

:(i)Togive practicalshapeto thelearningachievement.

(ii) Toselectstimulussothatpupilmaygiveexpected response.

(iii) To specifysuchsituations in which the response ofthe pupils maybeseen.

(iv) Todetermines suchcriterion behavioursso thattheperformanceof thepupils maybeseen.

(v)To specify the specific teaching strategiesforachieving thedesirableeducational objectivesbyanalyzingthe interactionintheclass-room situations

(vi) To modify the teaching strategies and tactics if the expected changes in the behaviour do notoccur.

According to Joyce and Weil, "A Model of teaching is a plan or pattern that can be used to shapecurriculum(longtermcoursesofstudy),todesigninstructionalmaterials,andtoguideinstruction in the classroom and other settings."According to Hyman, model is a way to thinking.According to him, "The model is a way to talk and think about instruction in which certain factsmay be organized, classified and interpreted."Again, according to Joyce and Weil, "Teachingmodels are just instructional designs. They describe the process of specifying and producingparticular environmental situations which cause the student to interact in such a way that specificchangeoccurs in hisbehavior."

Mr. Bruce R. Joyce emphasising the importance of teaching models says, "School Facilities andindividual teachers create life in schools by models they choose and create." The main feature ofteaching model is that they bring about the qualitative development of teacher's personality.Fundamentalcharacteristics oftheseteachingmodels are asfollows

:1. Some Assumptions. Each teaching model has certain basic elements which are kept in mindwhilethesemodels aredeveloped. Thesebasicelements—

(a) Creationofappropriateenvironmentforlearning,

(b) Occurrenceofaninteraction betweenateacher andthepupils,

(c) Usingproperteachingstrategiesandtacticsformakingtheteachingeasy,clearandunderstandable.Remember teachingmodel acts asan outline forcreatingtheenvironment

2. Presenting Appropriate Experiences. The second characteristic of a teaching model is that itprovides proper experiences to both, teacher and the pupil. Remember that selecting the contentand presenting it for learning before the pupils is the main problem of teaching. This difficulty isverifiedwhen ateacher presents appropriate experiencebeforethe students.

3. Answer to Fundamental Questions. The third characteristic of a teaching model is that itprovidesanswer to all the159fundamental questions.Forexample—

(a) How ateacherbehaves?,

(b) Whyhe does like this?,and

(c) What would be effects of his such behavior on the pupils? In short, in every teaching model,answers to all the fundamental questions pertaining to the behaviors of teacher and pupils arereceived.

4. Based on Individual Differences. The fourth characteristics of a teaching model are that it isconstructed on the basic of individual differences and according to various assumptions. For thisreason,weseethatsometeachersformulatingdifferentmodelsofteachingundertheinfluenceof their own philosophies of life. Under this influence, they either give importance to rotememoryor to theclarification ofconcepts.

5. Use of Student's Interest. The fifth characteristic of teaching model is to use the student'sinterest. Herbart's five-step pattern is still an importance base of teaching because its all the fivepointslook after theinterests of thepupils.

6. Influenced by Philosophy. The sixth characteristic of a teaching model is that each teachingmodel is influenced by the philosophy of life. We often observe that a teacher constructs ateaching model to change the behavior of the pupils according to the philosophy of which he is afollower. For example, an idealistic teacher develops the pupil as an idealist and a pragmatistteacher developsa pupilsaspragmatistandfor this,teachers developthe teaching modelsaccordingtotheir philosophies.

7. Maxims of Teaching. The seventh characteristic of a teaching model is that the basis of ateaching model is the maxim of teaching. In other words, the maxim of teaching functions as thefoundationineachteaching modelandthesemaximsdevelopthosepowers whichhelpinorganizing the personalities of the pupils. The readers are requested to read the sixth unit of thisbookto gain theproper knowledgeof maxims of teaching.

8. PracticeandConcentration.Theeightcharacteristicofateachingmodelisthatthedevelopment of a teaching modeltakes place as a result of continuous practice and study. Hence,its base is thinking. The development of a teaching model is possible only when the assumptionsaremadeclear bythinkingand necessaryuse of theproblem.

9. Development of Human Ability. The ninth characteristic ofa teaching model is that it helps indevelopingthehumanabilities. Also, itincreases the teacher'ssocialcompetency.

10. Teaching as an Art. Its tenth characteristic is that the teaching is known as an art. A teachingmodelencourages theart ofteaching.

Fundamental elementsofteachingmodelare:

1. **Focus.** Every teaching model has one or the other objective which is called its focal point. Ateaching model is developed by keeping in mind this focal point. In other words, the focus of ateaching model is that for which a teaching model is developed. Remember that the model hasvariousphases. Hence,forthis, someparticular typesof competencies aredeveloped.

2. **Syntax.** The syntax of teaching model means those points which produce activities focussedon educational objectives at various phases. In this way,under syntax, the teaching tactics,teaching activities and interaction between a pupil and the teacher are determined in such asequencethattheteachingobjectivesareachievedconvenientlybyproducingdesirablesituations.

3. **Social System.** A social system is according to the focus of a teaching model. Since everyteaching model has separate objective, therefore, every teaching model will have separate socialsystem. The real situation is that the every class is society which must has some system oradministration. This system is made by the pupil, teacher and the curriculum. The society makesthis system active by educational interaction so that the behaviour of the pupils may experiencedesirablechanges.Inthisway,underthesocialsystem,theactivitiesofpupilsandtheteachera nd their mutual relationships are discussed. Hence, the social system occupies an importantplacein makingthe teachingimpressive.

4. **Support System.**In this support system, itis evaluated by oral or written examination,whether the teaching objective has been achieved or not. In other words, teaching was successfulor not. On the basis of this success or failure, a clear idea is achieved regarding the effectivenessof those strategies, tactics and techniques which were used during teaching. Remember that sinceeach teaching model has a separate focus, thereforethe support system for every teaching modelwouldalso be separate.

3.41Types

teachingmodels areof threetypes:

1.PhilosophicalTeachingModels

IsraelSaffler hadmentioned followingtypes ofphilosophical teachingmodels—

(a) The Impression Model of Teaching. It is a common assumption that at the time of birth, thechild's brain is blank or empty. Whatever experiences are provided through teaching they go onlearning the impressions on the child's brain. These impressions are termed as learning. In thisprocess, the feelings of the sense organs and principles of language are given more importance.The success and effectiveness of entire teaching process depends upon the teacher's ability andcapabilitytocommunicate.

(b) Insight Model. The developer of this model was Plato. His belief was that the knowledgecannotbeprovidedmerelybyspeakingthewordsorbymerely,listening

them.Mentalprocesses

and language both work together. This model is an answer to the impression model. This insightmodel discards the assumption of impression model that the meaning of a teaching model ismerely to deliver the knowledge or ideas through teaching to the mental domains of the pupils. Itisthebeliefofinsightmodelthattheknowledgecannotbeprovidedmerelythroughtheexpressionsof sense organs,but knowledgeofthecontent is also essentialforthis.

(c) The Rule Model. Kant gives importance to logic power. In logic, certain rules are followed.The main function of education is to develop the character. The objective of rule model is todevelop the capacities of the pupils. The impression model and insight model have their ownlimitations.Theirdrawbackshavebeenremovedbytherulemodel.Inthismodel,moreimportance is given to the logic power.For this function, some particular rules are followed,such asplanning of teaching, organization and interaction occurunder specific rules.Culturalandmoral valuesaredeveloped with this model

3.411Psychological models

It is the assumption of psychologists that the teaching models can acquire the place of teachingtheories. In short, it can be stated that the teaching models are the primitive form of teachingtheories.Inthepsychologicalteachingmodels,therelationshipofteachingobjectivesandteaching-learningactivities are explained.

JohnP.Dececcohas giventhefollowingpsychologicalteachingmodels:

(a) ABasicTeachingModel. Thismodelwasdevelopedby RobertGlaser.Hehasusedpsychologicallaws and principles in this model.This modelhas thefollowingelements:

(i) InstructionalObjectives.

(ii) EnteringBehavior

.(iii)InstructionalProcedure.

(iv)Performance Assessment

.(i) Instructional Objectives. These objectives mean those activities which a teacher has to

dobeforeteaching.Inotherwords,theobjectivesofteacherandpupilsarecalledinstructional

objectives. This process is also known as task description. By this element, we can differentiatetheobjectives of schools,teachers and pupils.

(ii) Entering Behaviour. Entering behaviours mean those abilities or behaviours of the pupilswhich are necessary for the understanding of contents. In simple words, in order to acquire thelevel according to teacher's expectations, in future, the present level of pupils' knowledge andskillsis the enteringbehaviour.Enteringbehaviorexists wherethe instructions start.

(iii) Instructional Procedure. This element means those teaching activities which are used for thepresentation of the contents. Instructional process is known as the practical aspect of teaching. Inthisaspect, various methods, techniques,strategiesetc. areused.

(iv) Performance Assessment. This step means those tests on the basis of which a teacher takesdecisions. He decides the limits upto which a pupil has acquired the efficiency in the contents. Inthis step, performance may be measured by any method, but it should be valid, reliable, objectiveandefficient. Hence,the tests which areused in thisstep should beobjectiveand efficient.

(b) A Computer based Teaching Model. The teaching model was developed by LowrenceStuloro and Daniel Davis in1965. This is the most complicated model. This model has thefollowingelements—

(i) Entering behaviour of the pupil.(ii) Determination of Instructional objectives.(iii) Teachingaspect—In this element, computer teaching is selected according to the entering behaviors
ofpupilsandinstructionalobjectives.Theperformancesofthepupilsareevaluated.Iftheevaluation is satisfactory, then another teaching plan is presented. In this model, the teaching anddiagnosis go side by side. On the basis of diagnosis, remedial teaching is provided. In this model,individualdifferences arealso given importance.

(c) A Teaching Model for School Learning. This model was developed by John Carol. Hisassumption was that the time according to the needs of the pupils is considered as important andessentialcomponent.Thismodelhasthefollowingimportantelements—
(i)Definitionofobjectivesin behavioural terms.

(ii) Moreimportancetointelligenceand performanceorachievementinenteringbehaviours.

(iii) Thelevelofinstructions should beaccordingto the pupils.

(iv) Toprovide appropriate timeforlearningaccordingto theneeds of thepupils.

(v) For achievement, the pupils should have mastery. In this model, in the process of instruction,the pupils are provided with full opportunities. They are provided with time according to theirneeds in order to control the individual differences. Its main drawback is that the achievementtestscannot be administered in a systematicway.

d) An Interaction Model of Teaching. Its another name is— Neel A. Flander's (1960) socialinteraction model-1. Flander has considered teaching process as an interaction process.Flanderhas divided class-room behaviours in ten categories. It is also known as Flander's Ten CategorySystem. In this model, the behaviours of teachers and pupils are analyzed. This model has thefollowingelements or aspects—

(i) Objectivesor Focus—Thenatureofinteractionbetweenateacher andpupilsisdetermined.

(ii) EnteringBehaviours—Itincludes pupil'sfeelingideas andcurrentinformation.

(iii) Presentation—Verbal interaction occurs between a teacher and pupils which extends to theindirecteffect.

(iv) Evaluation—Inthis,theachievementorperformanceareevaluatedbytestsandtheeffectiveness of the interaction is decided. It is evident in this model, an interaction between ateacher and the pupil is more emphasized. In this model, the analysis or observation of non-verbal interaction cannot be made. Another drawback of this model is that no decision can betakenregardingthe contents in this model

3.412ModernModelsof Teaching

Bruce R.Joyce hasdividedallthe
teachingmodels,underthetitle"ModernTeachingModel",inthefollowingfourcategories—

(a) ModelsbasedonSocialInteractionSource.

(b) ModelsbasedonInformationProcessingSource.

(c) Modelsbasedonthe PersonalSource.

(d) ModelsbasedonBehaviourModificationasSource

.(a)ModelsbasedontheSocialInteractionSource. Inthemodelsbasedonthesocialinteractionsource, thesocialaspectsofhumanbeingsarekeptinmindandtheirsocialdevelopment is more emphasized. As the human nature emphasizes the social relations more,therefore, its analysis comes under this teaching model. Remember that the use of models basedon the social interaction sources can be used successfully in democracy. The social interactionsourceincludes thefollowingtypes of models—

- **Classroom Meeting**: Strengthens self understanding and responsibility towards self andothers. This model has rules and structure and specified intentions It is developed byWilliamGlaser.
- **Cooperative or Collaborative Learning:** Collective arrangement and division of tasks,sharingresultsandideas.Thereareanumberofauthorsclaimingthismodel–significantly Johnson and Johnson, and also Robert Slavin. There are also cooperativemodelsthat havemorespecific purposes liketheJigsaw Model.
- **Graffiti Model**: Graffiti is a cooperative learning structure in which students are asked togivewritten responses toquestions posed byateacher
- **GroupInvestigation**:Focusesoninterpersonalgroupskillsasstudentsengageinacquiring information. Major theoristfor this model are Hebert Thelen and John Deway.It focuses on development of skills of participation in democratic social process throughcombinedemphasis on academicenquiryskills.
- **Jigsaw Model**: Originally, the jigsaw concept was developed in the 1960‘s to facilitateracial integration.As an educational model it falls into the Social Family of methods.Thereareseveralvariationsofthismodel.The**jigsaw**techniqueisamethodoforganizing classroom activity that makes students dependent on each other to succeed. Itbreaks classes into groups and breaks assignments into pieces that the group assembles tocomplete the (jigsaw) puzzle. It was designed by social psychologist Elliot Aronson tohelp weaken racial cliques in forcibly integrated schools. The technique splits classes intomixedgroupsto workonsmallproblemsthat thegroupcollatesintoafinaloutcome.

- **Jurisprudential**:Developed by Donald Oliver and James P.Shaver. It is designed primarytoteach the jurisprudentialframe ofreferenceto solve social issues
- **LaboratoryMethod**:Group/interpersonalskills,personalawareness,andflexibilityskillsares tressed in thismodel.(National Training laboratoryBethel,Maine)
- **RolePlaying**:Roleplayasa teachingstrategybyFrannieShaftelandGeorgeShaftel– Inroleplaystudents assume roles and become thesourceof their inquiry.
- **Sociodrama**– Studentsassumeroles,actingoutissuesinordertofacilitateawarenessandunderstandingaboutc oncepts or important issues
- **SocialInquiry**:Problemsolvingusingsocialissues(BryonMassialsandBenjaminCox)

(b) Models based on Information Process Source. In the information process source, thepupils are provided with the knowledge of the facts and necessary information. In these models,thesolutionoftheproblemandknowledgeofstimuliareprovidedbycreatingeffectiveenvironm ent. These models have proved useful for developing intellectual competencies of thepupils.This informationsource includes thefollowingsixtypes of models:

- **Advance Organizer Model**: It is designed by David Ausubeltoincreases the efficiencyofinformation-processingcapacities.Therareseveralkindssothereisalotofpossibilitiesand varieties– expository,narrative, skimming,or graphic.
- **Cognitive Growth Development**:It is designed by Jean Piaget, Irving Sigel, EdmundSullivan.Itmainlyfocusesongeneralintellectualdevelopmentespeciallylogicalreaso ning.
- **Cognitive Views of Learning**: Focuses on the processes within the learners. Strategiesaredeveloped to encodeand retrieveinformation(Kauchak&Eggen, 1998)
- **CriticalThinking**:Dealswithaseriesofdialogsandexercisesdesignedtogetstudentsto think at higher levels and at levels that engage critical appraisal or critical thinking.(Paul, 2005)
- **Inductive Thinking Model/Inquiry Training Model:**Focuses on the development ofinductivementalprocessesandacademicreasoningortheorybuilding.Butthesecapacities are useful for personal and social goal as well. This model includes the work ofHildaTaba.

- **ConceptAttainment**:Focusesondevelopinginductivereasoning&conceptualknowledgedevelopment and analysis.It is developed byJerome Brunner.
- **Inquiry Training:** Engages students in causal reasoning, and aids then in developinghypotheses.Itprovidestraininginsystematicenquiry.ItisdesignedbyRichardSuchman.
- **LearningStylesModel**:Theseplansaredevisedandwrittenreflectingconceptsdeveloped by one of the learning style theorists or followers (such as Kathleen Butler orBerniceMcCarthy,Dunnand Dunn, etc.)
- **Memorization:**Improvesmemorycapabilitiesthrough avarietyofmethods andtricks.
- **Multiple Intelligences:** MI plans utilize, or are based on, those **8 intelligences** describedinthework of Howard Gardner..
- **Multi-modal Learning Model**: These plans reflect varied modalities used to encode andretrieve learning.Therearegenerally twobasic variations–**VAK** (visual,auditory,kinesthetic)and **VARK** (visual, aural, reading, kinesthetic).
- **Picture Word Inductive** or **PWIM** – Developed by ***Models of teaching*** author EmilyCalhoun this model is geared to help children in developing sight and written vocabularydrawingon commonlyfamiliar words.
- **Scientific Inquiry Model**: Instructor teaches students the research system of a subject ordiscipline.Problem solving may be utilized in this model. It is designed byJoseph J.Sehwab.It is designedto teach research system ofadiscipline.
- **Synectics**: Creative problem solving (Gordon, W. J. J. [1961] and also George M. Prince)In earlier versions of this model it was placed in the Personalist category, later versionsplacein in theInformation Processingformat.
- **Taba's Inductive Reasoning Model:** Advanced thinking can be taught through a seriesof steps designed to be an active transition between an individual and data. This is a verypowerfulmodel .

(c) Models based on Personal Source: In the models based on personal source, the personaldevelopmentisessentiallyemphasized.Insuchmodels,moreemphasisisgiventothedevelopment of internal and external powers of the pupils by developing their affective domainwhich facilitates the development of self-imagination and self-understanding. The followingarethepersonal sourcedominated models—

- **Nondirective teaching**: Focuses on self-awareness, understanding, autonomy, and self-concept . It is based on Carl Roger‘s work. According to him positive human relationhelps individual to grow. Here teacher helps students to explore new ideas. Students havefreedom to making decisions and choices. Teacher and students are partners in learning.TeacherNurtures and moulds students to be the way they are and Encourages students tothinkand reflecttheir uncertain feelingsandbecome betterand bepositive.
- **Developing Positive Self-Concepts** : It appreciates the talent and abilities one possess.Positive self concept evolves through moral values which should be emphasized amongstudents. Here students gain knowledge and experience by enhancing their interest in inlearningthroughselfconcept.Teacherprovidesreinforcementandboosttheirconfidencebygivingopportunityto express themselves.
- **Relaxation and stress reduction**: Exploring personal goals for relaxation, or using self-initiated relaxation techniques to calm anxieties in social settings. There are many modelsthatusethis themeas a basis.
- **Selection, Detection, Connection Model**– A self-directed teaching model for highlyintrinsicallymotivated high school students.
- **Awareness Training Model.** It developed byFritz Pearls . It gives emphasis on thedevelopment on interpersonal awareness and understandingas well as body and sensoryawareness.
- **Synectics Model.** It gives emphasis on development of creativity and creative problemsolving.It is designed byWilliam Gordon.
- **ConceptualSystemModel.**DesignedbyDavidHunt.Itisdevelopedtoincreasepersonal complexityandflexibility

(d) Behavioural Modification Model. In these models, the desirable changes are emphasizedwith the help of reinforcement and learning activity in the behaviour of the pupils. The followingmodelis included in thebehaviouralchanges based models—

- **Desensitization**:Replacinganxietieswithrelaxation
- **ContingencyManagement**:Dealswithfacts,concepts,andskills

- **Direct Teaching**: Expert or intermediary offers information this method in probably theoldest method among the teacher-centered models. Also it is more than likely the mostuniversallyexperiencedform of teaching formost of us..
- **Direct Training:** Develops distinctive predetermined patterns of behavior. Like directteaching an expert shows a novice how to do something. This is readily used in tradeschools and in situations where there are gradations of apprenticeship toward a desiredskillor goal.
- **Behaviorism**: Emphasized the importance of observable, external events on learning andtherole ofreinforces ininfluencingthose events (Kauchak&Eggen, 1998)
- **HunterModel,alsoMasteryLearning:**–highlystructuredapproachtoteachingwhereby plans are devised using the classic, repetitive lesson model developed by the lateMadelineHunter
- **Self-control**: Uses a series of rewards and internal dialogs to correct or improve socialbehavior
- **Simulation:** Students deal with hypothetical or social situations and various processes tohelptheirdecision-makingskills.Progressiontoanendgoalorspecifiedunderstandingoroutcomeis plotted.

3.5Modificationofteaching behavior

Teachers are the backbone of society as they provide education to the future citizens of thecountry .through their proper instructional activities and behavioral pattern. It is very essentialthat teacher must effective to perform adequate behavior toachieve teaching learning objectives.Howeverifteachershowsinadequatebehavioralsequencesintheclassroomtheteachinglearning objectives could not be achieved. Hence while preparing teacher through pre service andin service teacher education it is needed to implement proper technique to modify teacher‘sincompetentbehavioral pattern into morerefined one.

Behavior is defined as something a person does at a particular situation.. Behavior may beincreased by following the behavior with a favorable consequence or positive reinforcement.Teacher‘s behavior: Teacher‘s behavior is defined as the behavior or activities of persons as theygoaboutdoingwhateverisrequiredofteachers,particularlythoseactivitiesthatareconcerned

with the direction of guidance of the learning of others. .An implication of definition is thatteacher behavior is social behavior. Not only do teachers influence student behavior, but studentsinfluence teacher behavior as well. Teaching is an intimate contact between teacher, a moremature personality and student is less mature personality. In the process of education, teacherhelpsindeveloping thestudentpersonality by hisintimate contact.BehaviorModification:Behavior Modification is a discipline that makes use of learning principles to help pupil copewithor cureawiderangeof psychological problems.

In a teacher training program or in service program in the shape of theory and practice is alwaysaimed for bringing the needed modification and improvement in the existing teaching or teacherbehavior of the concerned pre-service or in-service teacher. In the field of pedagogy and teachereducation program a number of innovation and techniques have been introduced for modificationandimprovementofteacher‘sbehaviorandteacher‘scommunication.Theseareespecially concerned with the process of modifying the ways of interaction with the students and improvingone‘sbehavior asa teacher.

Teacherbehaviorreferstothebehaviororcommunication(verbalandnon-verbalcommunication)maintainedanddemonstratedby ateacheratthetimeofcarryingouthisteachingactivitiesintheclassroomalongwithhisstudents.Theterm modificationandimprovement of teaching or teacher‘s communication and behavior refers to the attempts adoptedfor bringing desirable improvement in the existing entry behavior of a teacher for helping him toattainthedesired terminalbehavior in ordertoexercise his professionalduties as effectivelyaspossible.Itcanbeproperlymodifiedthroughtheadoptionofavarietyoftechniquesincludin gmicro-teaching,Flander‘sinteractionanalysiscategorysystemandetc.

The principles of behaviourmodification is –When a behaviouror response is aroused by a stimulusofasituationonanumberofoccasions,thereisgreatlikelihoodoftherecurrenceofthat behaviour when the same stimulus of situation is presented later at any other place‖Thereare various feedback devices which are used for the modification of teacher behavior on the basisof this principle.. In teacher education programmebehavior modification is done bytraining onteachingskills , value, pedagogical practicethrough different technique such as Microteaching,Flender‘sinteraction analysis and Simulation.

3.51 Microteaching

Micro teaching wasfirst introducedat Stanford University,USA in1963. The Stanfordteachereducationprogramstaffmemberssoughttoidentifyisolateandbuildtrainingprogramm es for critical teaching skills. There are general teaching skills that can be applied atmany levels, for teaching many different subjects. Microteaching, has since then, been refinedand applied not only inteacher training but also business, nursing and the army. Research inIndia and other developing countries have shown that conventional micro teaching methods helptoimproveteachingcompetencies.

The teacher in the class room uses several techniques and procedures to bring about effectivelearning in his /her students, these activities include introducing, demonstrating, explaining orquestioning. The teacher could make use of non-verbal behaviours such as smiling, gesturing andnodding these group of activities are called teaching skills. The teacher trainee is introduced to awide range of teaching skills. Microteaching allows the teacher trainee to practice any one skillonhis/herown, and then combineit with others whenit has been mastered.

Definitions

Microteaching has been defined in several ways Allen D.W and Eve, A.N. (1968) definedmicroteaching as –a system of controlled practice that makes it possible to concentrate on specific teachingbehaviourandtopracticeteachingundercontrolledconditions‖

Allen,D.W(1966)definedmicroteachingas–ascaleddownteachingencounterinclasssizeand class time‖

Buch, M.B (1968) has given a comprehensive definition of microteaching as a –teacher education technique which allows teachers to apply clearly defined teaching skills to carefullyprepared lessons in planned series of 5 to 10 minutes. It encounters with a small group of realstudents,often with an opportunitytoobservetheresultson videotape‖

Passi,B.K(1976) writes that ―the most important point in microteaching is that teaching is practiced intermsof definable, observable,measurableandcontrollableteachingskills‖

Acompositedefinitionofmicroteachingtechniquewouldthus be

Microteaching is a teacher training technique involving a specific teaching behaviour/skill forshort duration of 5 to 6 minutes for a small class comprising 5 or 6 fellow teacher trainees/peergrouponasingleconcept of subject matter.

Somecharacteristicsofmicroteaching

1. Inmicroteachingthetraineecanconcentrate onpracticingaspecific, well-definedskill.
2. Microteachingprovidesforpinpointedimmediatefeedback.
3. Asmicroteachingisscaled downteaching, thereis noproblemof discipline.
4. Less administrativeproblemsariseasteachingsessionsareorganizedwithpeers.
5. Microteachingprovidesanopportunitytoundertakeresearchstudieswithbettercontrolovercondition sand situations.
6. MicroteachingcanbeusedasanintegralpartofteachertraininginIndiaassophisticatedgadgetryis not a must.

Meaning

Micro teaching represents an appropriate innovative technique for helping the pupil teacher‘sbeing trained in the colleges of education in their acquisition of the desired teaching skills. Wecan define micro teaching as a sort of specialized training technique that provides appropriateopportunities to the pupil teachers for the practice and development of some specific teachingskills by organizing teaching it its micro form- miniature in terms of class size, time duration andcontent to be covered. It is a device of imparting training to the inexperienced or experiencedteachers for learning the art of teaching by practicing specific skills through a ―scaled down

teachingencounters‖,i.e.reducingthecomplexitiesofrealnormalteachingintermsofsizeoftheclass, time and content.

Theuseofmicro-teachingtechniqueinreferencetotheteachereducationprogramadoptedin our country may prove advantageous on account of the specific features and characteristicsinherent in this technique, such as, (i) non-dependence over the practicing schools and

theirstudentsforthepracticeofskills,(ii)providingopportunityforthepracticeofoneteaching

skillatatime,(iii)reducingthecomplexitiesofthenormalclassroomteaching,(iv)providing appropriate opportunities for systematic observation of the teaching and immediatefeedback to bring improvement in one's teaching skill, and (v) providing opportunity to theteacher trainees for the development of their teaching skills in the laboratory like controlledconditions.Themicro-teachingprocedureadoptedforpracticingteachingskillsinourteacher Microteaching isa methodwhichenablesteacher traineestopracticea skillbyteaching a short lesson to a small number of pupils. Usually a micro lesson of 5 to10 minutesis taught to four or five fellow students. A supervisor, using an appraisal guide, usually ratesthe lesson and then discusses it with the teacher trainee, where closed circuit television (cctv)is available the appraisal guide may be redundant. The teacher trainee may alter his/herapproach if necessary and later re teaches the lesson to another group of pupils. This lesson isalsorated bythe supervisorand thenanalysed anddiscussed with theteacher-trainee.

Thesteps in a microteachingsession are

1. PLANNING

Thisinvolvesselectionoftheskilltobepracticed,awarenessofcomponentsoftheskill,selectiono fasuitableconcept,writingof micro lesson withspecific objectives.

2. TEACHING

Thefollowingsettingis suggestedfor themicroteachingtechnique.

Time: 5 minutes

Students: peer group-5 or so in numberSupervisors: 1or 2

Ifpossible,useofCCTVfacilitycouldbemadetoenabletheteachertraineetogetafirsthandlook at his weaknesses

3. FEEDBACK

Thisisa vitalaspect ofthemicroteachingcycle. Tobeeffectiveit mustbe clearlyrelatedtothemodeloftheteachingskillused.Appraisalguidesaddtothecommentsofthesuper visorandfellowstudents,theyfocusthefeedbackontospecificbehavioursand

canbeusedfortheanalysissessionorbejustgiventotheteachertraineewithawrittencommentor ratingof his/her skill performance.

4. REPLAN

Keepinginmindthefeedbackreceivedfromthesupervisortheteachertraineereplanshis/hermicro lessonwritinganother microlessonplan oreditingtheexistingone.

5. RETEACH

The teacher trainee re teaches, incorporating the suggested changes with the same studentsor another group of 5 students. Supervisor checks to see whether there is any improvement inskill attainment.

6. REFEEDBACK

Thesupervisor assesses thelesson againpointingout theimprovements andlapses.

Indianmodelofmicroteaching

TheIndianmodelof microteachinghasthefollowingsalientfeatures.

1. The micro lesson is taught /demonstrated under normal conditions with minimumelectronic gadgetry; available infrastructure (space, material and equipments) isusedasthe micro teachinglaboratory.
2. Immediatefeedbackisprovidedtothe traineeteacherbythe observers.
3. Thedurationofthemicro teachingcycleis asfollows

Teaching	6minutes
Feedback	6 minutes
Replan	12 minutes
Reteach	6 minutes
Refeedback	6 minutes
	36 minutes

The Indian model has been successfully tried out and is used in many of the teacher traininginstitutionsinIndia.

MicroteachingSkills

Themajorpremiseunderlyingtheconceptofmicroteachingisthatthecomplexteachingact can be split into component skills; each simple, well – defined and limited. These skillscanbeidentified,practiced, evaluated, controlledand acquired throughtraining

A teaching skill has been defined in various ways. A few definitions will clarify the meaningoftheterm

McIntyre,etal(1977)defineteachingskillas–assetofrelatedteachingbehaviourwhichis specifiedtypesofclassroominteractionsituationstendtofacilitatetheachievementofspecifiedtype sofeducationalobjectives‖

Characteristicsof ATeachingSkills

1. A teachingskill is a set of strictlyovert orobservable behaviours
2. Purelycognitive skillssuchasproblem solvingis notconsidered asteachingskill
3. Teachingskillshavethreebasiccomponents,viz perception,cognition,and action
4. Teachingskillshavethreedimensions

i) Non-verbalbehaviour

ii) Openness,and

iii) Natureofmovesinteachingtowhichtheskillbelongs Openness,Nonverbalbehaviour,Natureof moves

Alargenumberofskillshavebeenidentified.ThefirsteffortmadebyAllenandRyanresultedin identifying fourteen skills. Singh, L.C(1979) makes reference to twenty two general teachingskills. Menon, et al (1983) have suggested a list of seventy four skills. These skills have beenchosen as they foster teacher – pupil interaction, particularly as they belong to the four areas ofmotivation, presentation, recapitulation and questioning. These are the skills of set induction,demonstration,blackboardwriting,explaining,stimulusvariation,questioningandreinforce ment.

SkillsofTeachingUsedinMicroteachingSk

illofstimulus variation

- Theskillofstimulusvariationcoverstheactivitiestheteachercanintroducetovary thepresentation methods used in a lesson. This skill is concerned with three main areas of teaching,theyare

1. Themanner,voiceandteachingstyleof theteacher
2. Themediaand materials used duringteaching
3. Theteacher/pupilrelationshipduringthe class.

Components

1. Movement
2. Gestures
3. Voicemodulation
4. Focussing
5. Changeininteraction style

6. Pausing
7. Oral-visualswitching

Skillofreinforcement

- Reinforcement skill can increase student‘s involvement in their lessons in a number of positiveways. The skill is being used when the teacher reinforcesgood behaviour with a smile, whenthe teacher praises a good answer, or encourages a slow learner. Such positive reinforcementstrengthens desirable behaviour, increases student participation. Negative reinforcement, on theotherhand weakens undesirable behaviour.

Components

1. Positiveverbal
2. Positivenonverbal
3. Negativeverbal
4. Negativenonverbal
5. Wronguse ofreinforcement
6. Inappropriateofreinforcement

Skillof explaining

- Explaining can be defined as an activity to bring about a concept, principle, etc. It is an activityto fill up a gap in someone‘s understanding. The skill of explaining aims at making sure that theexplanation is understood. All teachers should strive to perfect the skill of explaining accuratelyandeffectively.

Components

- **Desirablebehaviour**

1. Beginningstatement
2. Explaining
   - Clarity
   - Fluency
   - Plannedrepetition

3. Concludingstatement

4. Questionstotestpupilsunderstanding

- **Undesirablebehaviour**

1. Irrelevantstatement

2. Lackingincontinuity

3. Inappropriatevocabulary

4. Lackinginfluency

5. Vaguewordsandphrases

Skillofprobingquestions

- Probing is used when the students reply is correct but insufficient, because it lacks depth.Asking a number of questions about the response given to the first question. Such techniquesthatdealwithpupilresponsestoyourquestionareincludedin theskillofprobingquestioning.

Thefive components of the skill of probingquestioningare

1. Promptingtechnique

Prompting is a technique of probing or going deep into the pupil‘s initial response andleading him from no response to the expected response. This involves the teacher to givecluesorhints to thepupil and ask leadingquestions.

2. Seekingfurtherinformation

Itconsistsofaskingthepupiltosupplytheadditionalinformationtobringinitialresponseto the criterion level or theexpected level.

3. Refocussing

This technique consists of enabling the pupil to view his response in relation to othersimilar situations.Itrequiresthe pupiltorelatea completely acceptable answer toothertopics alreadystudied byhim.

4. Redirectiontechnique

Redirection technique involves putting or directing the same question toseveral pupilsforresponse.Thisismostlyusedforthepurposeofprobingandforincreasingpupilparticipation.

5. Increasingcriticalawarenesstechnique

This technique mainly involves asking ‑how‖and ‑why‖of a completely correct or expectedresponse.It is usedto elicit a rationale for theanswer.

Advantagesofmicro teaching

- Microteachingisusefulfordevelopingteachingefficiencyinpreserviceandinserviceteachereducationprogrammes.
- Microteachingcanbeeitherinreal classroomconditionsor insimulatedconditions.
- Theknowledgeand practiceof teachingskillscanbegivenbythe useof micro teaching.
- Microteachingisatrainingdevicefor improvingteachingpracticeandpreparеseffectiveteachers.
- Itfocuses attentiononteachingbehaviour tomodifyandimproveinthedesireddirection.
- Microteachingisan effectivefeedbackdevicefor the modificationofteacherbehaviour.
- Microteachingminimizesthecomplexitiesofthenormalclassroomteachingbyscaleddownteaching.
- Microteachingpermitsincreasedcontrolandregulatesteachingpractice.
- Thedemonstrationsofmodellessonsinmicroteachingarepossiblethroughvideo-lessonsandshort films.

Drawbacks(limitations)ofmicro teaching

- Microteachingtendsto reducecreativityof teachers.
- Itsapplicationtonewteachingpracticesislimited.
- Itrequires competentand suitablytrainedteacher educatorsforitssuccessfulimplementation.
- Microteachingalonemaynotbeadequate.Itneedstobesupplementedandintegratedwithotherteachingtechniques.
- Microteachingis verytime consumingtechnique.
- Thelist ofskills is notexhaustiveand doesnot applyto all subjects.
- Toomuchfragmentationofskillsisnotconsideredconventionorpracticalfortraining.

- Someskills tendtooverlapeachother.
- Different skills are required for different stages and for different subjects which are difficult toformulateandachieve.Onlyafewbasicskillssuchasquestioning,explaining,stimulusvariation,management of class arecommon andcanbedeveloped.

3.52 Flander'sInteractionAnalysis

Ned.A.Flandersdefines,–Teachingasaninteractiveprocess.Interactionmeansparticipationof teacher and students in the process of teaching. In this process, teacher influences the students;students also interact with the teacher. Interaction takes place among the students themselvesalso. It means, in the process of teaching, every body interacts with every other person involvedin the process. Flander's system of interaction is known as the most popular technique used forthe analysis of the teacher behavior and interaction going on in the classroom at a particularteaching-learningsituation.Ittriestocategorizeallthesetsofpossiblebehaviorswhileinteracting with his students in ten categories divided into three major sections, namely: (i)teachertalk,(ii)studenttalk,(iii)silenceorconfusion.TheapplicationandutilizationofFlander's interaction analysis mainly involves three major steps: (i) observation and recording ofthe classroom events, (ii) construction of the interaction matrix, and (iii) interpretation of theinteractionmatrix

Teacherinfluencesstudentsthroughlecture,askquestions,criticizing,givingdirectionsetc.

- Student"sreactedtotheteacher"slectureandquestions,theygiveresponses.
- Itisinteractionbetweenteachersandstudents.

WhatisInteraction Analysis?

- Interactionanalysisisaprocessofencodinganddecodingapatternofinteractionbetweenthecommunicatorand the receiver.
- Encoding helps in recording the events in a meaningful way and decoding is used toarrange the data in a useful way and then analyzing the behaviours and interactions in theclassroominteraction.
- Therearefourimportant techniquestoobservetheinteractionsystematically. Theseare:

1. Flander"sInteractionAnalysisCategoriesSystem(FIACS)

2. ReciprocalCategorySystem(RCS)

3. EquivalentTalkCategories(ETC)

4. VerbalInteractionCategorySystem (VICS)

FlandersInteractionAnalysisTechniqueismostsuitableandwidelyusedtechniqueinthefieldofresearc hall over theworld.

Characteristicsof Interaction Analysis

1. Theclassroomverbalinteractioncanbemade moreeffective.

2. Theteacher canincreasestudentparticipationinhisteaching.

3. The directbehaviourofteachermaybeshiftedtoindirectbehaviour,whichismore suitableindemocraticwayof life.

4. Thetaperecorderandvideotapecanbeusedforrecordingtheclassroomevents.Thetraineecanencode and decodehis own behaviour.

5. Thistechniquecanalsobecombinedwithotherfeedbackdevicesuchasmicroteachingandsimulatedt eaching.

Flander'sInteractionAnalysisCategorySystem(FIACS)

- Ned.A. Flanders developedasystemofinteraction analysisto studywhatis happeninginaclassroomwhenateacherteaches.ItisknownasFlandersInteractionAnalysisCat egoriesSystem (FIACS).
- FlandersandothersdevelopedthissystemattheUniversityofMinnesota,U.S.A.between1955a nd 1960.
- Flanders classified total verbal behaviour into 10 categories. Verbal behaviour comprisesteachertalk, student talk and silenceorconfusion.
- Thetencategoriesarementionedas under:

1. TeacherTalk–7 categories

2. PupilTalk –2categories

3. SilenceorConfusion-1category

Thus,thefirstsevencategoriesincludeteachertalk.Nexttwocategoriesincludepupiltalk.Thelast tenth categoryincludes the small spans of silenceor pauseor confusion.

Thefirst7categoriesorteacher talkhasbeenbifurcatedinto a)indirecttalk,b)directtalk.

A) IndirectTalk

Inthismethodofanalysis,thefirstfourcategoriesrepresenttheteacher‟sindirectinfluence.

MeaningofVariousCategories

1. TeacherTalk (7Categories)

Category1:AcceptsFeelings

- Inthiscategory,teacher acceptsthefeelingsofthepupils.
- Hefeels himselfthat the pupilsshould notbe punishedforexhibitinghis feelings.
- Feelingsmaybepositive ornegative.

Category2:PraiseorEncouragement

- Teacherpraisesorencouragesstudentactionorbehaviour.
- Whenastudentgivesanswertothequestionaskedbytheteacher,theteachergivespositivereinforcementbysayingwordslike,„good‟,„verygood‟,„better‟,„correct‟, „excellent‟,„carryon‟, etc.
- **Category3:AcceptsorUsesideasof Pupils**
- Itisjustlike1stcategory.Butinthiscategory,thepupilsideasareacceptedonlyandnothisfeelings.
- Ifapupilpassesonsomesuggestions,thentheteachermayrepeatinnutshellinhisownstyleor words.
- Theteachercansay,„I understandwhatyoumean‟etc.Ortheteacherclarifies,buildsordevelopsideas or suggestions given byastudent.

Category4:AskingQuestions

- Askingquestionaboutcontentorprocedures,basedontheteacherideasandexpectingananswer from thepupil.
- Sometimes,teacheraskstthequestionbuthecarriesonhislecturewithoutreceivinganyanswer.Such questions arenot included inthis category.

B) DirectTalk

- Next5thto7thcategoriesrepresenttheteacher‟sdirectinfluence.

Category5:Lecturing/Lecture

- Givingfactsoropinionsaboutcontentorprocedureexpressionofhisownideas,givinghis own explanation orcitingan authorityother than apupil.

Category6:GivingDirections

- Theteachergivesdirections,commandsororordersorinitiationwithwhichapupil/studentis expected to complywith,
- -Openyourbooks.
- -Stand up on thebenches.
- -Solve 4thsum ofexercise 5.3.

Category7:CriticizingorJustifying Authority

- Whentheteacherasksthepupilsnottointerruptwithfoolishquestions,thenthisbehaviouris included in this category.

1.Teacher‟s„what‟and „why‟alsocomeunderthiscategory.

2. PupilTalk(2Categories)

Category8:PupilTalkResponse

- Itincludesthepupilstalkinresponsetoteacher‟stalk
- Teacherasksquestion,studentgives answertothequestion.

Category9: PupilTalkInitiation

- Talk bypupils thattheyinitiate.
- Expressingownideas;initiatinganewtopic;freedomtodevelopopinionsandalineofthoughtlike askingthoughtfulquestions; goingbeyondtheexistingstructure.

3. SilenceorPauseorConfusion(1category)

Category10: SilenceorPauseor Confusion

- Pauses,shortperiodsofsilenceandperiodofconfusioninwhichcommunicationcannotbeunder stood bythe observer.

ProcedureofObservation/EncodingProcedure

- Theobserver sits in theclassroomin the best positionto hear and seetheparticipants.
- Attheendofeverythreesecondshedecideswhichcategorybestrepresentsthecommunication events just completed. Thus the time involves in coding one tally forevery 3 seconds, is 20 tallies in one minute, 100 tallies in 5 minutes and 1200 tallies inonehour.
- Inthisprocessonlytheserial numbersofthecategories arerecorded.
- Theserial number ofthatcategoryis recorded on thedata sheet bytheobserver.
- Whentheobservationisover,theobservershiftstosomeotherroomandpreparesthedetailson the basis of thoseserial numbersof thecategories.
- Inthisobservationprocess,thewritingofserialnumbersofthecategoriesisknownasEncoding.
- WritingdetailsofbehaviouronthebasisofthesecategoriesisknownasDecoding.
- Theobservers shouldremember theserial numbersofthesecategories.

RulesforObservation/Rules forRecording orDecoding

Flanderscategorymethodhasmanyrulesforobservationwithoutfollowingwhichtheobservationisnotpossible.Theobservermustrembertheserules.Theseruleshelpinmaintainingconsistencyand makingobservationsuniform.Theserulesare as follows:

Rule 1: If more than one type of category occurs during a 3 second period, the observer shouldchoose the category thatisnumerically farther from category 5 (but notcategory 10). Supposetheobserver is indoubtwhetherthecategoryis 2 or 3;heshould write2 categories.

Rule2:Theobserver should notinvolvehispersonal viewpoint.

Rule 3: If more than one category is active in a span of 3 seconds, and then all the categoriesshould be recorded. If after 3 seconds, no category changes, then the same serial number shouldberepeated in the next 3 seconds.

Rule 4: If the time period of silence exceeds 3 seconds, it should be recorded under the categoryNo.10

Rule5:When teacher calls achild byname, theobserveris supposedto recorda4thcategory.

Rule 6: When the teacher repeats the student‟s answer and the answer is a correct, that isrecorded as a category No. 2. This tells the student that he has the right answer and thereforefunctionsas praise or encouragement.

Rule 7: When a teacher listens to a pupil and accepts his ideas for a discussion, then thisbehaviourbelongs to categoryNo. 3.

Rule 8: The words „All is ok‟, „yes‟, „yah‟, „hum‟, „alright‟ etc belong to the category No. 2.(Encouragement)

Rule 9:Ifa teacher jokeswithoutaimingatanypupil,this behaviour belongstothe categoryNo. 2. But if he makes any joke aiming at some particular pupil, then it belongs to the category No. 7***Rule 10:*** When all thepupils respond to a very small question collectively, then the serialnumberof category-8 is recorded.

3.53 Simulation

Simulation technique is utilized to induce certain behavior in a artificial environment. In thistechnique pupil teacher need to play several roles such as teacher, student and supervisor. Itinvolves practice based social drama. Simulation is utilized to introduce the novice teacher intoteaching in non stressful condition. It is defined as mechanism of feedback devices to inducecertain desirable behavior among pupil teacher by playing the role of teacher in their own groupsanartificial situation of classroom teaching.

Assumptions

- Theteacherbehaviorcanbemodifiedbyfeedbackdevices
- TherearecertainbehaviouralPatternisrequiredforeffectiveteachingwhichcanbestrengthened bypracticelikeaskill.
- Theteacherbehaviorhasitsowntaxonomy.
- Social skills are developed by practiceand imitation in a group. All members in agroup have an opportunity to practice in controlling and improving their ownbehavior forteachingpurpose.

Steps.

- The pupil teachers are assigned with certain roles such as teacher, student, andobserver.
- Social skills are discussed which are to be practiced with respect to concernedtopic.
- Scheduleofsimulationisorganizedwithrespecttodesignoftheartificialactivities and distribution of responsibility is done. For example in a simulationprogrammeit is decidedthat whowill do whatatwhat situationand time.
- Theprocedure andtechniqueofobservation isdecided.
- The schedule is followed for first practice session. The teaching is organized andobservations are taken for evaluating the teaching tasksof the performer. Theteaching is followed by discussion and demonstration to provide feedbacks topupil teacher by giving the awareness of social skills of teaching and suggestionsforfurther improvement.
- Thenextstepisbychangingthetopic,teacher,pupil,observerandsocialskillsthenextsimulationwillbestarted.Thetopicandsocialskillsshouldbechallengingone.

Elements

Theelementsofasimulationactivityincludeteacher,pupilandobserver.Theyhavethreefunctionssuch as Diagnosis, Prescription and evaluation.

Advantages

- Thistechniqueenables thepupilteacherwithcloselinkbetweentheoryandpractice.
- Studentteachercangetopportunitytoanalyzeandidentifyproblemsappearinginteaching.
- StudentteachersAcquireclassroommannerthoughtandfeelings.
- StudentteachercanidentifyclassroomlevelbehavioralproblemsandStudentscandevelopinsight and strategytocounterthose problems.
- Thistechniquemakesthestudentteachermoreconfidenceandmotivatethemtodevelopteaching skills andavoidtherisk of actualclassroom encounter.
-

3.5 Letus Sumup

In this unityouhave learnt aboutthe level ofteaching as memory,understanding andreflective level. In addition to this you got an idea about the teaching strategies and theirnature. You also explored philosophical, psychological and modern models of teaching indetail. Further you found different way and means to modify behavior of teacher in terms ofmicroteaching, Flender interaction analysis and simulation. Overall we expect that this unitwill motivate you to teach and design instructional material based on relevantteaching level,modeland strategyto promoteeducational technology.

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UNIT-IV -ProgrammedInstruction

4.0 Introduction

4.1 Objectives

4.2 Programmed InstructionanditsOrigin

4.3 Types of Programmed Instruction - Linear and

Branching4.4DevelopmentoftheProgrammedInstructionalMa

terial

4.5 TeachingMachines

4.6 ComputerAssistedInstruction

4.7 Researchesin ET

4.8 FuturePrioritiesinET

4.9 LetusSumup

4.10 References

4.0 Introduction

An educational technologist must be aware of the techniques and approaches to prepare selfinstructional materials that can perform the tasks of a teacher. In our previous unit we havediscussed several theories, models, strategies of teaching and communication. Those principlescan be transformed into the software and hardware components of educational technology foreffective learning process. In other words the educational technician can build relevant andefficient learning resource for the students by organizing concepts through planned way whichisnothingbut theprogrammed instruction.

4.1 Objectives

Afterstudyingthisunityouwill beable to

- Defineprogrammedinstruction

- Classifyprogrammedinstructionintodifferenttypes
- DevelopProgrammedInstructionalMaterial
- ExplainteachingmachineandComputerassisted Instruction
- Exploreresearchesin EducationalTechnology
- Predictfuturepriorities ineducationaltechnology

4.2 OriginofProgrammedInstruction

Programmed instruction is an innovation in the field of individual learning process. It is the typeofinstructionwherelearnercancontrolthelearningprocesseasilywithoutinstructor.Programmed instruction is an strategy for self learning or auto instruction. It provides such a typeof resource material through printed or software form which is prepared in a pre planned andcontrolled way to promote individual instruction with learner‘s own pace. It is prepared topromote distance or open learning that helps the learner to learner beyond formal environment ofeducation with the additional advantages of drill, practice, self evaluation and motivation. It is amethod of presenting new context to students through consequent sequences in a controlledmanner.

Therearevariousoriginsandflavorsofprogrammedinstruction.Themostimportanttosubcategories are based on the theory of Skinner. Originally introduced in the mid-1950s bybehaviorist B.F. Skinner, programmed instruction is a system whereby the learner uses speciallyprepared books or equipment to learn without a teacher. It was intended to free teachers fromburdensome drills and repetitive problem-solving inherent in teaching basic academic subjectslikespelling,arithmetic,andreading.Skinnerbasedhisideasontheprincipleof**operantconditioning**, which theorized that learning takes place when a reinforcing stimulus is presentedto reward a correct response. In early programmed instruction, students punched answers tosimple math problems into a type of keyboard. If the answer was correct, the machine wouldadvancetoanotherproblem.Incorrectanswerswouldnotadvance.Skinnerbelievedsuchlearning could, in fact, be superior to traditional teacher-based instruction because children wererewarded immediately and individually for correct answers rather than waiting for a teacher tocorrect written answersor respond verbally. Programmed instruction quickly became popularandspawnedmucheducationalresearchandcommercialenterpriseintheproductionof

programmed instructional materials. It is considered the antecedent of modern computer-assistedlearning.

Theoriginofprogrammed instructioncanbediscussedasfollows:

Skinner'soperantconditioning:Programmedinstructionisbasedonskinner‘soperantconditioning theory which is a behaviorist theory stating that learning is change in behavior, i.e.the individual's response to events (stimuli). Behavior can be conditioned by rewarding the rightstimulus-responsepatterns..Thebasic principle of

1. Behaviorthatispositivelyreinforcedwillreoccur;intermittentreinforcementisparticularlyeffective
2. Informationshouldbepresentedinsmallamountssothatresponsescanbereinforced("shaping")
3. Reinforcementswillgeneralizeacrosssimilarstimuli("stimulusgeneralization")producingsecondaryconditioning

Skinnerargued stronglyagainst teachingthatis basedon punishment

Definition

Programmedinstructionhasbeendefinedinvariousways:

According to JE Espichand Bill Williams,(1967) ‑programmed instruction psa planned sequence of experiences, leading to proficiency, in terms of stimulus- response relationship thathaveproven to be effective.‖

According to Susan Markle, (1969), ‑programmed instruction is a method of designing reproduciblesequenceofinstructionaleventstoproduceameasurableconsistent effecton abehaviour of eachandeveryacceptablestudent.‖

N.S.Mavi(1984)Programmedinstructionisthetechniqueofconvertingtheliveinstrumentalprocessintoselflearningorautoinstructionalreadablematerialintheformofmicrosequences

(the segment of subjectmatter) which the learners are required to read, make some right orwrong response, correct wrong responses to confirm the right response and attain completemasteryof theconcepts explained in themicro sequences.

Learningfrom programmed instruction onalearningmachine usuallyincludes:

- acarefullydesignedcoursewithpredefinedsequenceofunits,
- verysmallunitsdeliveringonlyasmallamountofnewinformationsoitiseasilyunderstandable (shaping),
- immediateanswer after fillingin themissinginformation(reinforcement)
- movingonto thenext unitbased onthecorrectness ofthegivenanswer.

TheprinciplesofProgrammedinstructionincludes

- Principleofsmallsteps
- Principleofactiveresponding
- Principleofaimmediate reinforcement
- Principleofselfpacing
- Principleofstudent testing

Nature

- Thesubjectmatterisbrokendownintosmallstepscalledframesandarrangedsequentially Frequentresponseis required bystudents
- Thereisimmediateconfirmationofrightanswerorcorrectionofwronganswerdo.nebylearneri.e. selfcorrection nature.
- _Thecontentandsequenceofframesaresubjectedtoactualtryoutwithstudentsandarerevisedon thebasis ofdata gatheredbyprogrammerwhich denotesdiagnosticnature.
- Eachstudentprogressathisownpacewithoutanyfearandanyhumiliationasheterogeneousclass.
- Programmedlearningmaterialcontainstheassumptionaboutthelearnersclearly.
- Thematerialalsocontaintheobjectivesofprogrammeinoperationalterms.
- Aninteractionisemphasizedbetweenthematerialandlearner.

- Facilityofcontinuous evaluationis the natureofprogrammedinstruction.

Advantages

- Programmedinstructionenhances=srtudent‘scriticalthinkingabilityandpowerofjudgement.
- Inshortperiod oftime studentscanlearn huge content.
- Itenhancesindependentlearningwithoutteacher, routionclass.
- Itimprovesthequalityofeducation.
- Ithelpsforindividual learningandavoids socialandemotionalproblems.
- Smallframesorsegmentsofcontentenrichestheinterestofleanerandhelpstodiagnoselearningproblem.
- Studentsareactiveparticipantsinlearning.
- Itimmediatelyprovides resultofprogress.
- Itis veryhelpful fordistancelearning.

.Disadvantages

- Itlimits students in creativityand originality
- Preparationofmaterialis timeconsuming
- Itisonlyfruitful forindividual learningand studentsmaygetseparated fromsociety.
- Itrestrictsstudentteachercommunicationandrelationship.
- Doubtscannotberesolvedthroughthisinstructionimmediatelyasformal education..

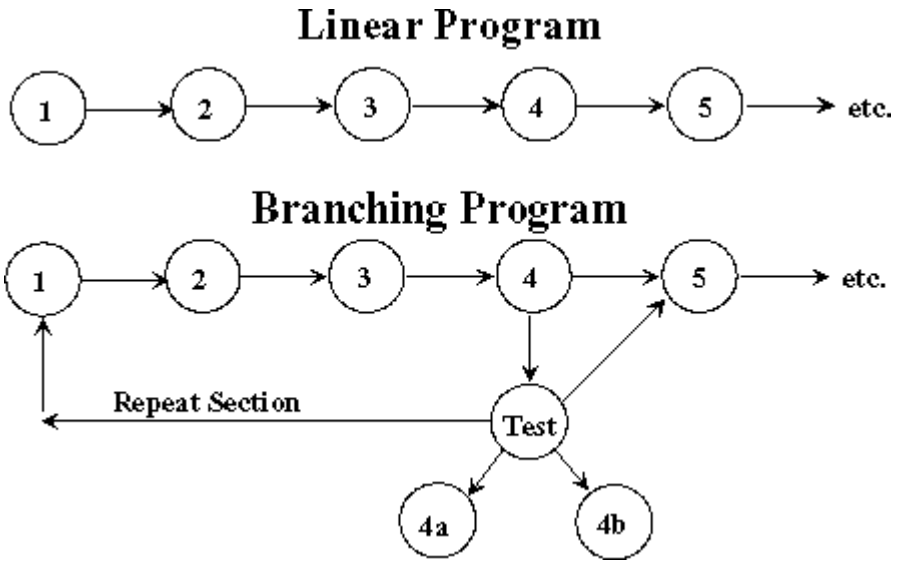
4.3TypesofprogrammedInstruction -LinearandBranching

Two types of programmed learning can be compared. Linear programming involves a simplestep-by-step procedure. There is a single set of materials and students work from one problem tothe nextuntiltheendof theprogram.Branchingprogrammingismorecomplex.Studentschoose

from multiple-choice answers and then are prompted to proceed to another page of the bookdepending on their answer. If a correct answer is given, students move on to another page withmore information to learn and more questions to answer. An incorrect answer leads to commentson why the answer is incorrect and a direction to return to the original question to make anotherselection.

Hencethereare twotypesofprogramming.

1. LinearProgramming.
2. BranchingProgramming.



LinearProgramming:

Theapplicationofoperantconditioningmodeloftеachingisknownas_linearprogramming‘or _Skinnerian programming‘ or _Extrinsic programming‘ propounded by B. F. Skinner (1954).Thisprogrammedmaterialisbasedonoperantconditioningtheoryoflearningwherecontingenci esofreinforcementareproperlyarrangedwhichshapesupthebehaviorofanorganism in a desirable manner. A linear programming of instruction is one in which the learnerisallowedtostudyonlyoneframeatatime.Aframeisthesmallestbitofinformationthatis

supplied to a learner at a time. The frame is followed by a question. When learner gets feedbackthe confirmation of his answer, he is supplied the next frame. This process goes on till the lastpart of the subject-matters. Here learner goes ahead in a straight line fashion. Every learner issupplied the same series of tasks and each of them fulfils the task according to their individualrateoflearning.

Thefounderofthis programmingisB.F.Skinner.Itisbasedon theoryofoperantconditioning.Ittells that –A Certain direction can be given to human behavior‖, for this purpose activities is neededto divide in small parts and maketheiranalysis.

In a linear programme learner‘s response are controlled externally by programmer sitting at adistance place. A loinearprogramme iscalled straight line programme as the learner starts fromhis initial \behaviour to the terminal behaviourfollowing a straight lin. The student proceedsfromone frame to the nextuntilhecompletes theprogramme

Characters

- Learnersgetopportunitytoreadsmallamountofinformationandproceedfromoneframeto otherinalogical sequence.
- Learners exposed to questions regularly so that they give responsesin which their correctresponsearerewarded and wrongresponsesarecorrected.
- Provisionofinstantfeedbackisthereinlinearprogramme.
- Selfpacingprovisionisavailableforlearnerinlinear programme

  Scopes:

  The scopes of linear programme is vast at elementary , secondary and distance education.The problems of single teacher, lack of infrastructure can be overcome through linearprogrammed instruction at elementary level. Remedial instruction, individual learning,versatilecurriculuminstruction,individualinterestoflearnercanbesatisfiedatsecond ary level through this programme. Linear programme is also a boon for distancelearner who prefer to learn according to their own pace, interest, ability and conveniencewithout rigid time ,teacher orformal classroomsetting.

PrincipleofLinearProgramming:

The assumption behind the linear programming is that student learns better if content ispresented in small units, student response if immediately confirmed, results in better learning,student‘serror createhindranceinlearning.StudentlearnsbetterinLaissezfairyenvironment.

Frame size in small steps; include only one element of topic at a time. Each step iscomplete in itself. It can be taught independently and can be measured independently. Framestructureisbasedonstimulus-response-reinforcement.Therearefourtypesofframes.Introductoryframes, Teachingframe, practiceframes and testingframes.

Responsesinlinearprogrammingarestructuredresponsesandarecontrolledbyprogrammerand notbylearners.Immediateconfirmationofcorrectresponsesprovidereinforcement,wrongresponses areignored.

Linearprogrammingisbased onfivefundamentalprinciples:

• Principle of small steps : In this programming a student acan proceed from little known subjectcontentandattainmasteryoverthecontentthroughmanysmallsegmentsorpacketofinformation with own pace.
• Principle of active responding: It is based on learning by doing where learn has to work byrespondingthequestions and challenges.
• Principle of immediate confirmation: This principle is based on the reinforcement to work ontheprogrammeto makelearners learn through instantfeedbacks to response.
• Principle of self-pacing : The student can work each step as slowly as he is able to do andthink.If pace of classroom is too fast or too slow the child will not learn properly as with his ownpace.
•Student-testing:Youwillfindthispprincipleineachlinearprogrammedinstructionthatpromotesselfevaluation at theend ofeachframe.

TypesofLinearProgramme:

- ConstructResponse:ItisSkinneriantypeinwhichthelearnerhastoconstructresponsew hilegoingthrough formatsofprogramme text.

- MultipleChoiceQuistion:Inthistypestudentsgetopportunitytorespondmultiplechoic equestionwherelearnerhastoselecttheresponseoneachframeanditis presentedin discriminationframesequencetypeof programme.
- Conventional Chaining: in this type of formats each frame it is connected to2ndframewhich becomes a part ofthe stimulus of the3rdandso on thedown line.
- SkipLinear:It uses theskipping device asit solving problems of review andoverreview wherea bright student mayskip the simple programme .
- Criterion Frames: This is used to direct the learner along linear path according totheir responses at those critical situations. This frame decides whether the learnershouldgo through the particular sequenceor not.
- Ruleg System: Here the content is organized in terms of rules first and thenexamples. The rule is given a complete form and the examples are in incompleteform. A learner hadsto construct responsetocomplete theexample.
- Egrule System: It is just the opposite of the ruleg system. The content is organizedintermsofexamplesandthenrules.Theexamplesaregivenincompleteforma ndthe rule is in incompleteform.

LimitationsofLinearprogramming-

1. Nofreedomforstudenttoresponse.
2. Based on learning theories which were formulated by experience conductedonanimals.A human being ismore intelligent,than animals,he hasgotanintelligentbrain.
3. Every learner has to follow the same path; therefore, student may cheat fromoneanother.
4. Wrong responses are avoided in the programme. No remedy is provided forthem.

Branchingprogramming

This program was developed by NormanA. Crowder (1960).Itconsists of rather long framesthat often appear as pages in an ordinary book form. The student reads the page or frameandthen responds by collecting the correct alternative in a multiple choice item. The correct responsedirects the students to frame which confirms his response and introduces a segment of newmaterials. This system takes into account the individual differences and provides the necessaryremedialmaterialaccordingtothestudentsneeds.Ithasbeendevelopedbykeepingtheindividualneeds, interests, andattitudes of learners.

PrinciplesofBranchingProgrammedInstruction:

Frame size is large. There may be a Para or page in the frame. Frame structure is Exposition-Diagnosis- Remediation types. Responses not rigidly structured and responses are selected bylearner 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 thebasis of diagnosed weaknesses of the learner. Error helps in diagnosis of the weaknesses oflearner. More than 20% error rate can be accepted. The purpose of Branching programming is todrawout weak points oflearner and provideremedyfor recoveringthoseweaknesses.

• Principle of Exposition : Students can learn better if she is exposed to whole situation orcontent. Here the whole concept is presentedto the learner so that learner can learn properly thefullinformationwhich isprovidedin thehomepage..Ithastwo purposesteachingand learning.

• Principle of Diagnosis : Here the weak point of learner is identified after exposition and henceone can assess whether the learner could learn what the causes are for it and then it can bemodified.Thus itcan besaidthat students‘errorhelps indiagnosingthe weakness.

- Principle of Remediation: Learner can learn better if remediation is provided side byyside.Ifalearnerchoosewrongalternatively,thenthrlearnerhastomovetoawrongpage where remedial instruction is provided and directed to return tio the hopme page andsheaskedto choosethe right answer.
- PrincipleofDemocracy:Studentlearnsbetterindemocratic environment.

TypesofFrame:

Theprogrammed text iscalled –Scrambled text‖whichconsists of two types of pages one homepageandanotherwrongpageTherearetwotypesofframesinBranchingProgrammeHomepage(forteachingand diagnosis) &Wrongpages (forremediation).

- HomePage:Thispageconsistofcontentorconceptsandfollowedbymultiplechoicequestions. This pageinvolvesfouraspects:

(i) Teaching:Thelearnergoesthroughtheinstructiontocomprehendtheinformation.

(ii) Response: At the end of instruction multiple choice is given to the learner tochoose the correct response which the learner has to discriminate and giveresponse.

(iii) Diagnosis: If learner chooses wrong response. She has tomove to the wrongpage.Ifshechoosesrightresponseshemovestothenexthomepagewherethere st content is presented.

(iv) Reinforcement: In the beginning of the home page the response is reinforcedby confirming it and hence the learner is encouraged through verbal approvalorpraise.

- WrongPageorRemedialFrame:

Itismeantfor

(i) Repeatingthestudent response

(ii) Negativeconfirmation

(iii) Reason to whyshe is wrong

(iv) Furtherexplanationinsinglelanguage

(v) Directionas to whythe learner dhouldgo next

Scopes

Branchingprogrammingisusedforsecondaryaswellashigherclasses.Higherobjectives can be achieved such as multiple discrimination etc. It is useful for students of aboveaverageandhigh intelligence.Itcan alsobeused in Distanceeducationprogrammes.

BackwardBranchingProgrammes

If the learner makes an error she has to taken to the remedial frame where she has given somemore help for understanding the concept and solving the problem and will be directed to theoriginal frame number one. So the learner goes through the same frame twice by moving backthroughremedial frame.

ForwardBranchingProgramme

Here whether the leaner is making correct response or wrong response he will be going to thenext or new page. If he makes wrong choice he is directed to remedial frame where hismistakes are fully explained, followed byanother parallel question from which hegoestothenextframeinthe mainstream

LimitationsofBranchingprogramming

1. It does not consider learning process whether learning is taking place or not.Main emphasis is on diagnosing the weakness of learnersand providing remedyto them.

2. Thereisnosequencingofpages.Studentfindsitdifficulttofollowthesteps. He does not find it exciting or motivating, therefore he does not want to gothroughthesepages.

3. More emphasis on remediation rather than teaching. Hence, it is only atutorialapproach.

DevelopmentofthePrammedInstructionalMaterial

ForthedevelopmentofProgrammed Instructionalmaterialsthestepstobefollowedare

- Preparatoryphase
- WritingPhase
- ValidationPhase

PreparatoryPhase:Itinvolves

- Viewingtheprogrammeon anytopic.
- Decidingtoprepareaprogramme
- Selectingatopic
- Prepareacontentoutline
- Specificationofobjectiveinbehaviouralterms.
- Specifications(assumptionsaboutlearner)
- Enteringbehaviour. Pre-requisite skills.
- Preparationofpretest
- Terminalbehavior.Expectedperformanceofthelearnerattheendofacourse.
- Preparationofpost-test.i.e preferablycriterion test.

Writingphase: Thisphaseinvolves5 steps

1. **PresentationofMaterialsinFrames:**

- Aframeisasmallsegmentofinformationswhichcallsforthparticularstudent‘sresponse
- Thetaskoftheprogrammeistoprovidethosestimulinecessarytoevokethestudents‘response.
- Theacquisitionofthose responseisasteptowards theterminalbehaviour
- Eachframeshould containrelativelysmallsegmrnt ofcontent
- Programmershouldpresentonlyenoughmaterialsto elicittheresponse.

2. **RequiresActiveStudentResponse**

- Animportantpart ofthe frame istheresponse the studentis askedto make
- Theresponse maybe overt orcovert
- Forovertresponsestudents writedownon answersheetpaper
- Forcovertresponsestudentshavetocomposeresponsementallytoeachblankintheframebeforeturningthepageto thecorrect answer

3. ProvidesanswerstoforConfirmationorcorrectionofstudentresponse

- Providing the correct response, with which the student compare his own responses, hasbeenastandard characteristics ofprogrammedinstruction.
- Whenthestudent discoversthatresponseiscorrect/incorrect heobtainconfirmation

4. UsePromptstoGuideStudents‘response

- Prompts are case provided in the programme frame to guide thestudent to the correctresponse.
- Prompts are supplementary stimuli in that they are added to a frame to make the frameeasierbut arenot sufficient in themselves to producetheresponse.

5. ProvidecarefulSequencingof Frames.

- The sequence in or order in which your frames appear depend upon two factors i.e.(i)Thedescriptionandanalysisofthebehaviouryourprogrammeintendstoteach
  (ii) Theconditions necessaryforlearningrequiredbythe various tasks
- It is even possible to develop frames that engage the students in problem solving anddiscoverylearning.Forthis programmer needtodo followingtasks:
  - (i) Allthebasiclearningconditionssuchasdiscrimination,generalization, contiguity, practice and reinforcement can be embodiedintheframe sequence.
  - (ii) Frame sequence canalso provide for review and testing whenevertherearenecessary.

Validationphase: Itincludesfollowingsteps

- Try-outandrevision
- Individualtry-out
- Smallgrouptry-out
- Mastervalidation
- Editing,reviewing,revising,andmodifyingtheprogramforfinalpreparationbasedonfruitsof try-out.

4.5TeachingMachines

Thefirst teachingmachinewasinvented by**SydneyL. Pressey**in the1920's,

Skinner in the 1950's introduced a concept of "teaching machine" that differed from Pressey's insome ways.–The teaching machine iscomposed of mainly a program, which isa system ofcombined teaching and test items that carries the student gradually through the material to belearned. The "machine" is composed by a fill-in-the-blank method on either a workbook or in acomputer. If the subject is correct, he/she gets reinforcement and moves on to the next question.If the answer is incorrect, the subject studies the correct answer to increase the chance of gettingreinforcednexttime.‖(learningtechnologiestimeline,retrieved16:22,16August2007(MEST))

Romiszowski (1997:16) cited by Kristinsdóttir defined the "core" of Skinner's stimulus-responsemodelas–thatlearninghasoccurredwhenaspecificresponseiselicitedbyspecificsituationorstimulus with a high degree of probability. The more likely and predictable the response, themore efficient the learning has been. These attempt to shape human behavior by presenting agradual progression of small units of information and related tasks to the learner. At each stagethe learner must actively participate by performing the set task. He is then immediately suppliedwithfeedback in the form of correctanswer‖

Skinner stated that the student should compose his response on his own, rather than choose itamong a large range of possibilities, because the responses should not be recognized but recalled.Moreover, according to Skinner, the machine should present information in a designed sequenceofsteps.Inprogrammedinstruction,thesubjectisthestudentitself,theaimishis/herunderstanding of the material andthereinforcement or punishment refers to satisfaction ordisappointment, resulting from the comparison of the student's answers with the E.answers givenbythecomputer.

Teaching machines did not allow students to proceed in their tasks unless they understood thematerials. The machines helped students to give the correct answer by "a logical presentation ofmaterial" (Skinner on Programmed Instruction) and by *"hinting, prompting, suggesting, and soon,derived from an analysis of verbal behavior"*(Skinner, 1958)

."A teaching machine or auto instructional device is a piece of apparatus designed to be operatedbyanindividualstudent."Thisapparatushasfollowingfeatures:1.Thereisadevicefordisplayingthequestionorproblemonthemachine.2. The studentinresponse mustdosomething

overtly about the problem such aswriting an answer or pushing a button toindicate answer.3.The student is informed by the machines through some device whether his answer is correct orincorrect andsometimes,whyheis rightorwrong.

Teaching machines are normally divided into three categories— adjustive, linear and branching.The adjustivemachinesdeveloped by Pressey and his co-workers provide knowledge ofresultstostudentsansweringmultiple-choicetestquestions.Methodsofgivingfeedbackincludelighting a bulk allowing a punch in the correct answer space to penetrate more clearly and havingchemically treated paper change colour. The term adjunctive is used because these machines areadjuncts to the main teaching-learning process. They only contain tests and they are used to testandrevise material which the student hasalreadyencountered elsewhere

4.4ComputerAssistedInstruction

The use of computers in education started in the 1960s. With the advent of convenientmicrocomputers in the 1970s, computer use in schools has become widespread from primaryeducation through the university level and even in some preschool programs. Instructionalcomputers are basically used in one of two ways: either they provide a straightforwardpresentationofdataortheyfillatutorialroleinwhichthestudentistestedoncomprehension.

If the computer has a tutorial program, the student is asked a question by the computer; thestudenttypesinananswerandthengetsanimmediateresponsetotheanswer.Iftheansweris correct, the student is routed to more challenging problems; if the answer is incorrect,various computer messages will indicate the flaw in procedure, and the program will bypassmorecomplicated questions until the student showsmasteryin that area.

computer-assisted instruction CAI; instructional activities that use a computer as the primaryvehicleforteachingcontent orprocesses rather than one-to-oneinteraction with a student.

It is a self-learning technique, usually offline/online, involving interaction of the student

withprogrammedinstructionalmaterials.Computer-assistedinstruction(CAI)isaninteractive

instructional technique whereby a computer is used to present the instructional material andmonitor the learning that takes place. CAI uses a combination of text, graphics, sound and videoin enhancing the learning process. The computer has many purposes in the classroom, and it canbe utilized to help a student in all areas of the curriculum. Hence CAI refers to the use of thecomputer as a tool to facilitate and improve instruction. CAI programs use tutorials, drill andpractice, simulation, and problem solving approaches to present topics, and they test the student'sunderstanding.

computer-assisted instruction (CAI), a program of instructional material presented by means of acomputer or computer systems. CAI, as the name suggests, is the use of a computer to provideinstruction. The format can be from a simple program to teach typing to a complex system thatuses the latest technology to teach new keyhole surgery techniques. CAI draws on knowledgefromthefieldsof learning,cognition,HumanComputerInteraction (HCI) amongstothers.

Itfacilitateinstructional procedurewithfollowingfeatures

1. Textormultimediacontent

2. Multiple-choicequestions

3. Problems

4. Immediatefeedback

5. Notesonincorrectresponses

6. summarizesstudents'performance

7. Exercisesforpractice

8. Worksheetsandtests.

TypesofComputerAssistedInstruction

CAI systems fall into two basic types: tutor or tool (Levy, 1997), although the term CAI oftenrefers to computer tutors. In the tutor classification, the computer has the information to be learntand controls the learning environment. A CAI tool enhances the teaching process, usually byfocusing on one particular learning task and aiming to improve it. Within the tutor classification,there are four modes: drill and practice, tutorials, simulations and games (Gloor, 1990). Drill andpractice (also known as ‑Drill and Kill‖) is suited to the behaviouristmodel, with repeated practice on lower-level cognitive skills. Although often frowned upon, it can be useful in certaincontexts. The tutorial mode is probably one of the most common ones within CAI. In this mode,the computer presents the information, guides the learner through the system, allows the learnertopractiseand thenassesses the learner.

In simulation mode, the learner works with a simulation of the real world. Simulation is usedwhereit isnot practical or feasible to provide the learning in ‑real-life‖(for example, pilot training). In games mode, there is generally a competitive element (e.g. time constraints or arace). The idea is to reinforce knowledge that the learner is assumed to have. While it is oftenmore difficult to develop CAI programs in the simulation and games modes, learners tend to findthementertainingandchallenging.ThusCAIcanbecategorizedinfollowingdifferent types.

1. Drill-and-practice Drillandpracticeprovideopportunitiesorstudentstorepeatedlypracticetheskills that havepreviouslybeen presentedandthat furtherpracticeis necessaryformastery.

2. Tutorial. Tutorialactivityincludesboththepresentationofinformationanditsextensionintodifferen tforms of work,includingdrill andpractice, games and simulation.

3. Games Gamesoftwareoftencreatesacontesttoachievethehighestscoreandeitherbeatothersor beat thecomputer.

4. Simulation. Simulationsoftwarecanprovideanapproximation ofrealitythatdoesnotrequiretheexpense of real lifeorits risks.

5. Discovery. Discovery approach provides a large database of information specific toa courseor content area and challenges the learner to analyze, compare, infer and evaluate based on theirexplorationsof thedata.

6. Problem Solving This approach helps children develop specific problem solving skills andstrategies.

Advantagesof CAI

There are many advantages to using computers in educational instruction. They provide one-to-one interaction with a student, as well as an instantaneous response to the answers elicited, andallow students to proceed at their own pace. Computers are particularly useful in subjects thatrequire drill, freeing teacher time from some classroom tasks so that a teacher can devote moretimetoindividualstudents.Acomputerprogramcanbeuseddiagnostically,and,onceastudent‘s problem has been identified, it can then focus on the problem area. Finally, because ofthe privacy and individual attention afforded by a computer, some students are relieved of theembarrassment of giving an incorrect answer publicly or of going more slowly through lessonsthanother classmates.

CAI brings with it several potential benefits as a teaching/learning medium. These include self-paced learning, self-directed learning, the exercising of various senses and the ability to representcontentin avarietyof media. Thussome oftheadvantages of CAIare

• One-to-oneinteraction

• Greatmotivator

• Freedomtoexperimentwithdifferentoptions

• Instantaneousresponse/immediatefeedbacktotheanswerselicited

• Selfpacing-allow studentstoproceedattheirownpace

• Helpsteachercan devotemoretime toindividualstudents

• Privacyhelps theshyand slow learner to learns

• Individualattention

• learnmoreand morerapidly

• multimediahelpstounderstanddifficultconceptsthroughmultisensoryapproach

• selfdirectedlearning–studentscan decidewhen,where,andwhatto learn

Limitationsof CAI

CAIisnotwithoutitsproblems.Withself-accessprograms,learnerscanbeleftontheirowntoomuchandmayfeeloverwhelmedbytheinformationandresourcesavailable.Ontheotherhand,theremaybetoomuchdirectionfromthecomputerifclassroom methodsaretransferredtothecomputer.Dawson(1997) states that the tendency to use multimedia –gimmicks‖should be avoidedandthatdueattentionmustbepaidtocurrenttheoriesonlanguageacquisition.However,thisdoesnotmeanthatmultimediashouldbeavoided.Someresearchers(Levy,1997;MeskillandMossop,1997)believethatmeaningfulmultimediapracticesarepossibleandcanresultinmorelearning.Malfunctioning equipmentcannotonlyresultinlosttimebutalsocreateanegativeattitudetowardsCAI.Whiletheabilityt ofollowlinksinaWeb-basedlearningsystemcanbeofbenefit,learnersmaylosetimeinnavigation.CAIisnotyetamaturefield. WhilevariousCAImodelsexist,notallCAIprogramsofferallthebenefitsofCAI.Sometimeswhatistheoreticallyadvocatedisnotimplementedinpractice(eitherduetolackofknowledgeortechnologicalunfeasibility). Sometimes,the effectiveor goodpracticesarenot easytoidentify.Continuingresearchwillhelptoadvancethefieldof CAI.Oneinteresting researchareaisthatofWeb-basedAdaptiveEducationalSystems(WAES),wherethesystemadaptstothelearner,providingdifferent levelsof information,help andfeedback(Brusilovsky,2000).

There are drawbacks to the implementation of computers in instruction, however. They aregenerallycostlysystemstopurchase,maintain,andupdate.Therearealsofears,whetherjustifiedornot,thattheuseofcomputersineducationdecreasestheamountofhumaninteraction.

Oneofthemoredifficultaspectsofinstructionalcomputersistheavailabilityanddevelopmentof software,or computer programs.Coursewarecanbe boughtasa fully developedpackagefrom a software company, but the program provided this way may not suit the particular needs ofthe individual class or curriculum. A courseware template may be purchased, which provides ageneral format for tests and drill instruction, with the individual particulars to be inserted by theindividualschoolsystemorteacher.Thedisadvantagetothissystemisthatinstructiontendstobe boring and repetitive, with tests and questions following the same pattern for every course.Software can be developed in-house, that is, a school, course, or teacher could provide thecourseware exactly tailored to its own needs, but this is expensive, time-consuming, and mayrequiremoreprogrammingexpertisethan is available.So disadvantages ofCAIare

• mayfeeloverwhelmed bytheinformationandresourcesavailable

• Overuse ofmultimedia maydivert theattentionfromthecontent

• Learningbecomestoo mechanical

• Nonavailabilityofgood CAIpackages

• Lackofinfrastructure

•LackofCompetentHumanresources

•Difficultyin preparingsoftware

4.7 Researchesin ET

The primary focus of its research is upon practical tools that can be applied in teaching ComputerScience at university level. Complementary research is addressing conceptual issues concernedwiththedevelopmentofcomputer-basedlearningenvironmentsforgeneraleducationalapplications.

Current work is concerned with software tools and principles in the areas of peer assessment,plagiarism detection, and automated submission and assessment systems. Other projects includethe developmentof agent-based pedagogic architectures,and the use of learning objects ineducationalsoftware.

Other research within the group has been directed towards principles for the development ofinteractivelearningenvironments.Asignificantthemeinthisworkisthatthechoiceofprogrammingparadigmstronglyinfluencesthesupportthatthecomputercangivetoconstructionistapproaches to learning.

Topics currently being investigated include the following (which include under each topic acompletelist of publications).

- AutomatedAssessment
- ComputerScienceEducation
- MobileLearning
- PlagiarismDetection
- SupportingTechnologies
- While there is much on-going research on new technologies and their effects on teachingandlearning,thereislittlerigorous,large-scaledatathatmakesforsolidresearch,education experts say. The vast majority of the studies available are funded by the verycompaniesandinstitutionsthathavecreatedandpromotedthetechnology,raisingquestions of the research‘s validity and objectivity. In addition, the kinds of studies thatproduce meaningful data often take several years to complete—a timeline that lags farbehindthefast paceofemergingand evolvingtechnologies.
- For example, it is difficult to pinpoint empirical data to support the case for mobilelearning in schools—a trend that educators have been exploring for several years now—let alone data to support even newer technologies such as tablet computers like the iPad.The studies that do look at the effects of mobile technologies on learning are often basedon small samples of students involved in short-term pilots, not the kind of large-scale,ongoingsamplesofstudentsthateducatorsandpolicymakerswouldliketosee(Education Week,Feb. 23, 2011).

- However,thereareahandfuloflarge-scalestudiesthatdopointtotrendsandobservations in the education technology field. For example, Project RED, a researchinitiative linked closely with the One-to-One Institute, which supports one-to-one laptopinitiatives in K-12 schools, released a study about successful implementation models ofeducation technology in October 2010. That study found that most of the schools thathave integrated laptops and other digital tools into learning are not maximizing the use ofthose devices in ways that best make use of their potential. The report goes on to outlinethecritical steps neededto capitalizeon thatpotential (Project RED, 2010).
- A meta-analysis of more than a thousand studies regarding online learning was releasedby the U.S. Department of Education in 2009, followed by a revised version of the reportinSeptember2010.Thatstudyconcludedthatstudentsinonline-onlyinstructionperformedmodestlybetterthantheirface-to-facecounterparts,andthatstudentsinclasses that blended both face-to-face and online elements performed better than those insolely online or face-to-face instruction. However, the researchers cautioned that the vastmajorityofthestudiesinthemeta-analysiswerefromstudentsinhighereducation,andas a result, the conclusions drawn may not be applicable to K-12 education. In fact, amajorfindingofthemeta-studywastheseverelackofrigorousresearchstudiesregardingonlinelearning in K-12(U.S. Department of Education,2010).
- The Speak Up survey, which is conducted annually by Project Tomorrow—a nonprofitresearch organization—and Blackboard, Inc., surveyed nearly 300,000 students, parents,teachers,andothereducatorsabouttheirviewsontechnologyineducation.Findingsfro m the 2010 survey found an increased interest from educators in mobile learning, aswellasanincreaseinthenumberofstudentswhoownmobiledevicessuchassmartphones, regardless of economic or demographic differences. The survey also foundan increased interest in online learning and blended learning opportunities, as well aselectronictextbooks.
- While these studies represent some of the more large-scale research conducted in thisfield, education advocates emphasize the need for a wider range of well-researched,longitudinal,and ethicallysound dataon educationtechnology.

- **E-Learning**
- Online learning in many forms is on the rise in schools of all types across the country.Students in many parts of the country now have a long list of choices when it comes to e-learning. The menu of options often includes full-time, for-profit virtual schools; state-sponsored virtual schools; supplemental online learning courses offered by brick-and-mortar schools; and charter schools presenting a hybrid option of digital material coupledwithface-to-faceinstruction.
- TheInternationalAssociationforK-12OnlineLearning,oriNACOL,estimatesthatmore than 1.5 million K-12 students were engaged in some form of online or blendedlearning in the 2009-10 school year. At the end of 2010, supplemental or full-time onlinelearning opportunities were available in at least 48 of 50 states, plus the District ofColumbia(iNACOL, 2010).
- Options for full-time virtual schools are growing. Students from kindergarten throughhigh school can seek out online schooling opportunities, which usually include virtualteachers and a combination of synchronous and asynchronous online learning (EducationWeek,June15,2011).Theseschoolsarestartingtofocusmoreontheissueofsocialization for their students and some are incorporating more face-to-face instructioninto their array of services to allow for student interaction both online and in person.They'reformingclubs, holdingproms, and creatingschoolnewspapers.
- At the end of 2010, 27 states plus the District of Columbia had full-time online schoolsservingstudentsstatewide,accordingtoiNACOL'sreport,–ANationalPrimeronK-12 OnlineLearning.‖
- But full-time virtual schools also face the reality that for many students with two parentsworking outside the home such a scenario is not an option. Such students often cannot tapinto full-time online schools for that reason, and virtual school providers acknowledgethat their version of education works best, particularly in the lower grades, when an adultispresent to assist.
- In addition to courses that offer an online instructor, some researchers say students havehad the most success with hybrid or blended education. That can mean that students usedigitalcontentwitha face-to-face instructor,or anonline instructorandanin-classteachermayworktogethertoassiststudents.Hybridcharterschools,whichusemostly

digital curriculum with face-to-face support and instruction—sometimes even combinedwithan onlineteacher—are gainingafoothold in K-12.

- At the same time, a growing number of students now have access to online courses intheirbrick-and-mortarschools.Schoolsaretappingintoe-learningforavarietyofreasons. Some schools say it saves money and allows them to offer a wider variety ofcourses, including Advanced Placement classes. Others say it can help with schedulingconflicts when a face-to-face class is provided only at a time when a student already hasanother obligation. In addition, online courses can provide highly qualified teachers forclasses otherwisenot offeredbyaschool.
- Oneofthefastestgrowingareasofe-learning,andacategorythatmainstreamschoolsare increasingly turning to, is credit recovery. These online courses allow students toretake classes they haven‘t passed, but in a new and different format.Many of thesecreditrecoverycoursesgivestudentsabriefevaluation,thenpermitthemtoskipconcepts they already know to focus on ideas they haven‘t yet grasped. However, someeducators and education experts have questioned the quality and academic rigor of theseprograms(Education Week, April 28, 2010).
- So where are traditional schools getting these online courses? Some are developing theirown, others are purchasing them from for-profit vendors and a growing number are abletotapintostatevirtualschoolsorstate-ledonlinelearninginitiativesthatcurrentlyexistin 38 states. Some schools find it easier to use courses developed by a state-run virtualschool,sinceit is alreadyalignedwith their statestandards.

- **MobileComputing**
- Increasing access,growing acceptance, anddecreasing cost are all helping to make theuse of mobile devices a popular and increasing trend within the world of educationaltechnology. Whilethedigitaldividebetweentheaffluentanddisadvantagedstillexists,mobiledevicesappea r to havethepotentialto close it, atleast in terms of access.
- According tothe ―Horizon‖report. The reportpredicts game-based learning willbe widelyadoptedbymainstreamclassroomswithintwotothreeyears(NewMediaConsortium, 2011).

- Instead of educational software, e.g. Math Blaster or Reader Rabbit, students and teachersaremuchmorelikely toincorporateWeb-basededucationalgamesintoclassrooms,which are often available for free. The National Science Foundation has played a largerole in providing funding for the research and development of Web-based science gamessuch as Crystal Island—a game developed by the IntelliMedia Group at North CarolinaState University where students investigate an infectious outbreak—and the River CityProject—a multi-user virtual environment for science inquiry created by researchers atHarvardUniversity(EducationWeek,March17,2011;EducationWeek, April30,2008).
- Some educators hope that games and simulations will provide a way for students topicture themselves in career paths they may otherwise would not have chosen, especiallyin the STEM (science, technology, engineering, and mathematics) subjects, and somearguethatgamesandsimulationsofferstudentsawaytoconnectwhattheyarelearningincla ssto(simulated)real-worldsituationsinasafeandlow-costenvironment(EducationWeek, March17, 2011).
- Researchers have also found that games and simulations may help students learn byhelping them visualize processes they otherwise could not see, such as the flow of anelectron or the construction of a city. Games can also promote higher-order thinkingskills,suchascollaboration,communication,problem-solving,andteamwork(MIT,2009;National Academies Press 2011).
- However,creatingahealthymarriageofanengagingandentertaininggamewitheducational objectives and goals is a challenging process that has yet to be perfected. Tocreate and design games with the kind of high-resolution graphics and complex situationsthat children are used to seeing in commercial games takes a large amount of funding andtimethateducatorsoftendonothave.Andfindingthetimeandresourcestotrainteachers who may not be familiar with game-based learning is a challenge for mostschools.
- Despite these challenges, many educators and researchers are committed to developingeducational games and incorporating game-based learning into classrooms across theUnited States.

- **SocialNetworking**
- Many schools are no longer debating whether social networking should play a role ineducation. Instead, that debate has shifted to what social networking tools work best andhowto deploythem (Digital Directions, June16, 2010).
- Someschoolsareusingmainstreamsocialnetworkingtools,likeFacebook,foreverything from promoting school events to organizing school clubs as well as for moreacademicpurposes related to assignments and class projects.
- Buteducatorswaryaboutsecurity,advertising,information-sharing,andsocialinteractioninsuchanenvironmentareoftenseekingoutsocialnetworksdesignedspecifically for learning instead. These sites, like ePals and eChalk, are more restrictive,often allowing teachers and school officials to limit not only who can join, but whostudents can talk to andinteract with. Some educators also say students seem to takethese sites more seriously and treat them with a more academic focus and tone than theywould a site they routinely use for socialization with their peers. These sites also oftenprovide safety features that can detect foul language or bullying phrases and alert ateacher(Education Week, June15, 2011).
- Many educators say the academic benefits of social networking are real. They allowstudents to work cooperatively on projects in an online environment that feels familiar tostudents. Teachers often report that a student who does not speak up in class will be moreengaged on a social networking site and that these sites allow instructors to extend theschool day.

  Educators have also taken to social networks for professional development. The socialnetworkingsiteNing,forexample,hasaplethoraofgroupsitesorganizedaroundteaching a particular subject, like English literature or high school biology. In addition,Twitter has become a force in the professional development arena, with features such asEdChat, weekly one-hour conversations that take place around pre-arranged educationaltopics(Digital Directions, June16, 2010).
- Web 2.0 and other technology tools are making it quicker and easier than ever to createdigital portfolios of student work—a method of showcasing student progress that expertssay increases student engagement; promotes a continuing conversation about learningbetweenteachers,parents,andstudents;andextendsacademiclessonsbeyondschool

walls (Education Week, March 17, 2011). New social networking tools to aid this arebeingdevelopedand updated regularly.

- Wikis and blogs allow students to work collaboratively and share their work with alimited or unlimited number of people. The video phone service Skype is also popularwith teachers, particularly for allowing their students to connect with peers in other partsof the country or the world. Other tools, like VoiceThread, which archives and indexesimages, videos, text and audio, are popular with all ages of students, including at theelementarylevel (Education Week, June16, 2010).

4.8 FuturePrioritiesinET

The development of the personal computer and the Internet has "enabled man to transcend thebarriersofphysicaldistance"(Castro,2001).Peoplenolongerlimittheirlearningtoaneducational setting such as a school or university. Learning can take place at home or at theoffice, by online distance learning. The future of technology will enable people to be life-longlearners (Thornburg, 1999). Learning will continue into the work place where there is a "need tokeepup with current information"(Castro, 2001).

Learners do not have to depend on their memories. They can store information on their personalcomputers and be able to retrieve it at all times. The concept of knowledge has changed fromhaving information in the brain, to "having access to information about a particular topic andknowing how to use it" (Castro, 2001). Teachers' roles will ultimately change since they will nolonger be providers of information. They will be facilitators who concentrate "on the teaching ofsocial skills rather than academic or technical expertise" (Castro, 2001). However, "teacher-mediated classrooms do not foster computer-mediated learning" (Snyder, 2004). "Technologyrequires changes in the way humans work" (Mulcahy, 2003), yet schools are "adding computersto a traditional, authoritarian, classroom-centered" (Snyder, 2004) setting. It won't work. "AsGeneral Electric CEO Jack Welch has said, "If the rate of change inside an institution is less thanthe rateofchange outside, theendisinsight" Welch(ascitedinThornburg,1999,p.7).Technology is developing ata very fast pace.Ifeducation fails to keep up with the currenttrends, will it keep up with those of the future? This paper will discuss two articles that deal withfuturetrendsofeducationaltechnology.Thearticlesare:DavidThornburg's"Readingthe

Future" (1999) and Aureo Castro's "Learning in a Digital Age: Current and Future Trends inEducationalTechnology"(2001).

Even though David Thornburg's article appeared in 1999, the trends he writes about are stillrelevant today. David Thornburg lists seven "trends and their consequences" (1999) while AureoCastro mentions six. The former discusses the "rapid increase in the growth of information,
thecollapseoftheinformationfloat,increasinglyglobalmarketplace,computerscontinuetoincrease in power while dropping in cost, the computer chips continue to follow Moore's Law,bandwidth is becoming free and finally network power continues to obey Metcalfe's Law asfuture trends that will have "implications for education" (1999). Aureo Castro's future trendsinclude, an increase in web enabled courses, more home schoolers, new roles for teachers, aparadigm shift in primary education, new roles for schools and centralization of curriculum andinstructionaldevelopment"(2001).

According to David Thornburg, because the Internet is "doubling in size every year, [and] theweb is doubling in size every 90 days [there is need for] a complete rethinking of education"(1999, p. 4). He suggests the need for "technological fluency [so that students] can sit down at acomputer and use it as easily as [they] can pick up and read a book in [their] native language"(1999,p. 5).

Aureo Castro sees "home schooling [and] more web-enabled courses" (2001, p. 2) as futuretrends in "rethinking education" (Thornburg, 1999, p. 4). He predicts "new roles for teachers [as]facilitators [who will] concentrate on the teaching of social skills rather than [on] academic ortechnical expertise" (2001, p. 2). Aureo Castro predicts that there will be an increase in onlinecourses "offered through the Internet" (2001, p. 2). He suggests that "the only way to go with thefast increase in population and the physicalconstraint of the existing collegesand universities[is] in cyberspace" (2002, p. 2). Aureo Castro focuses on the Internet and "distance education" asa trend that will become even more popular in the future. He claims that future "schools willcease to become like a mill where students undergo academic processing but will evolve intobecomingcommunity centerswhere studentsengage ina variety of activitiesandprojects"(2001, p. 3). According to Aureo Castro, school "curriculum will shift from what used to beextra-curricularactivities and become themain curriculum" (2001, p. 3).

DavidThornburgfocusesonanothertrendforthefutureofschools.Heworriesabout"thelackof technologically fluent workers" and getting prepared for jobs that have not been invented yet(1999, p. 5). David Thornburg claims that educators "must create an educational system thatprepares students to work in fields that do not even exist" (1999, p. 6). David Thornburg doesn'tpredict how educators would deal with the educational trends of the future. However, he doesclaim that once "technologies become commonplace with all students, the tools for lifelonglearningwillbeinplace,[addingthat]thenotion[of]lifelonglearningisasurvivalskill"(1999, p. 6). Future trends cannot be ignored. David Thornburg's final words are harsh. He claims that"Schools that ignore the trends shaping tomorrow will cease to be relevant in the lives of theirstudents and will disappear quickly" (1999, p. 7). The competition is tough. This reflects JackWelch's statement that "if the rate of change inside an institution is less than the rate of changeoutside,the end is in sight"(ascited in Thornburg,1999, p.7).

"Truly global leaders are geo-strategic futurists who gaze across time and make extraordinarythings happen" (Feather, n.d).Aureo Castro and David Thornburg are educational futurists whohave looked atfuture trendsintechnology andtheir impactoneducation.Technology canimprove student learning and make teachers' work much easier. Educational technology willbecome"powerfullow-cost,off theshelftoolsthatcanmakelearning more engaging andknowledge more accessible" (Snyder, 2004). Educators "must work in partnership to break downthe barriers of time, space, content and form so [learners] can collaborate, communicate, andshare ideas" (Mulcahy, 2003).

AccordingtoISTE(InternationalSocietyforTechnologyinEducation(ISTE),(2010),itreleased its "Top Ten in '10" list in an effort to provide a framework for policymakers andeducators when making decisions about how education funds will be spent--with a particularemphasis on employing technology for school improvement in the context of new and pendingfederalfundingprograms tat aredemanding educationreforms.

"No matter what kind of improvement path a state or school district may follow, the use oftechnology in learning and teaching is essential for real and lasting change," said ISTE CEO DonKnezekin a statement released this week.

ISTE'srecommendationsincludethefollowing:

1. Establishingtechnology"asthebackboneofschoolimprovement"forstudentlearning,professionaldevelopment, and administration;
2. Integratingtechnologytopreparestudentsfor careers andkeepstudentsengaged;
3. IncreasingfederalfundingsupportfortechnologythroughEnhancingEducationThroughTechnology(EETT);
4. Keepingeducatorsuptodateonthelatesttechnologiestohelpthembemoreeffectiveintheirteachingenvironments;
5. Increasingsupportforpre-serviceeducationtechnologyprogramstohelpproducemoretechnologicallyadeptteachers;
6. Usingtechnologyto"scaleimprovement"and"accelerateреform";
7. Ensuring universal access to broadband services,whichISTE describedas "critical sothat students and parents have access to school assignments, grades, announcements andresources";
8. Developingsystemsandstrategiesthatwillhelpeducatorsuseassessmentdatatoimprovestudent learning;
9. Investing in research and development focused on "innovation in teaching and learning";and
10. Promoting"globaldigitalcitizenship"throughtechnology-based,cross-bordercollaboration.

4.9 Let us Sumup

In this unit you have gone through the concept, origin technique and procedure of designedprogrammed instructional material both in linear type as well as in branching type. You got andetail idea about the principles, steps, advantages of programmed instruction. Teaching machineconcept also has been outlined. Further the current research in educational technology and futurepriorities in this field has been exposed. We hope that this unit will assist you to design selfinstructionalmaterials aswell asmotiveyou toconduct researchin this area.

4.10 References

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