

ADVANCED TECHNIQUES OF EDUCATION

UNIT – I

CONCEPTUAL BASES OF EDUCATIONAL AND INSTRUCTIONAL TECHNOLOGY

Meaning, nature and scope – Instructional Technology: Scope and Objectives, Differences between Educational Technology and Instructional Technology. – Historical development of Educational Technology– programmed learning stage; media application stage and computer application stage – Components of educational technology: Software and hard ware.

Educational technology

Educational technology is basically the use of technology for the process of teaching and learning. This is also known as instructional technology. Educational technology focuses on using new technology to develop and implement innovative educational approaches. The main objective of using educational technology is to improve the process of teaching and learning. In education technology, technology is used as an educator, as a teaching tool and a learning tool.

Meaning and scope of instructional technology

Instructional Technology is to create engaging, effective learning experiences, that cater to the needs of different individuals. It is the precise procedure of outlining, creating, assessing and dealing with the whole instructional procedure to guarantee successful and proficient learning. Below are the basic elements of Instructional Technology:

- Analyze learner and organizational needs
- Determine instructional goals and objectives
- Construct a method for evaluating learner achievement

- Design and select instructional strategies
- Implement the training
- Evaluate the training

It involves managing and coordinating available instructional aids and resources in order to facilitate learning. It also involves the selection of suitable technology based on the learning needs of students as well as the ability of teachers to adapt such technology to fit specific learning activities.

Objectives of instructional Technology

Instructional materials provide the core information that students will experience, learn, and apply during a course. They hold the power to either engage or demotivate students.

Historical development of Educational technology

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The history of educational technology can be traced back to thousands of years – from primitive writing tools such as clay tablets, thick palm leaves, and parchment made of animal skin, to the latest technological developments like artificial intelligence and virtual reality. However, at present, we usually refer to digital technologies by the term educational technology. Using interactive whiteboards, instructional videos, educational computer games, and using hand-held devices like tablets and smartphones are some examples. Educational technology has facilitated

the concept of e-learning, i.e., learning online. There are two types of e-learning as synchronous e-learning and asynchronous e-learning. Synchronous learning refers to real-time classes via digital technologies like Skype and chatrooms. Asynchronous learning, on the other hand, refers to students learning the same material at different times across different locations; this uses technologies like blogs, websites, wikis, e-mail, and video-posting sites.

historical development of the field of instructional technology incorporated Reiser's and Shrock's thoughts.

Before 1920's	◆ Instruction was interpreted in the metaphor of exercise, in which the mind was thought to consist of faculties in need of exercise ◆ The advent of scientific investigation into human and animal learning ◆ Edward Thorndike's influence of laws of learning, his advocacy of social engineering, his advocacy of educational measurements. It led to establish education as a science
1920's	◆ Bobbitt: the goals for schooling could be derived from an objective analysis of those skills necessary for successful living ◆ The design of instruction was the connection between the desirable outcomes and the planning of the instructional experience that could facilitate their acquisition. ◆ The emergence of the concepts of objectives, individualized instruction and mastery learning
1930's	◆ Tyler's Eight Year Study: refining the procedures for writing instructional objectives; recognizing the cyclical nature of evaluation within the process of creating instruction designed to

	produced specific outcomes, i.e. the recognition of the formative evaluation process
1940's	◆ World War II: the creation and distribution of the mediated learning materials ◆ A large number of psychologists and educators were called on to conduct research and develop training materials for the military services. Development of training materials were based on their work on instructional principles derived from research and theory on instruction, learning and human behavior. • Robert Gagne • Leslie Briggs • John Flanagan ◆ Psychologists used their knowledge of evaluation and testing to help assess the skills of trainees and select the individuals who were most likely to benefit from particular training programs à examining general intellectual, psychomotor and perceptual skills ◆ Research and development effort directed toward education. ◆ Emergence of the role of the instructional technologist; formation of the basic instructional development team: designer, SME and producer calling for professional development of a new field
1950's	◆ Skinner's research into operant conditioning ◆ Skinner's programmed instruction: behavioral objectives, small frames of instruction, self-pacing, active learner response to

	inserted question, immediate feedback. ◆ Shifting education's focus to the outcome behavior of the learner instead of the process of the behavior of the teacher. ◆ Reaffirming the feasibility of a self-pacing and mastery learning Task analysis was first used by Air Force personnel in the early 1950s. ◆ Bloom's Taxonomy of Educational Objectives (1956)
1960's	◆ Articulation of the components of instructional systems and the recognition of their systems properties ◆ Robert Gagné's The conditions of Learning (1965): a milestone that elaborated the analysis of learning objectives and the relationship between different classes of learning objectives and appropriate instructional designs • 1965: Robert Gagné's The conditions of learning: five domains of learning outcomes: verbal information, intellectual skills, psychomotor skills, attitudes, and cognitive strategies - each of which required a different set of conditions to promote learning • Gagne's nine events of instruction: "Gagne's working the area of learning hierarchies and hierarchical analysis also has had a significant impact on the instructional design field... Gagne indicted that skills within the intellectual skills domain have a hierarchical relationship to each other, so that in order to readily learn to perform a superordinate skill, one would first have to master the skill subordinate to it. This concept leads to the important notion that instruction should be designed so as to ensure

that learners acquire subordinate skills before they attempt to acquire superordinate ones." (Reiser, 2001). A learning task analysis or instructional task analysis for identifying subordinate skills becomes a key feature in many instructional design models.

- ◆ The essential features of systems, i.e. evaluation and feedback resulted in the refinement of evaluation procedures, developing criterion-referenced measures

- ◆ Federal support of the instructional development: in 1957, after the launching of Sptunik by the Soviet Union, the USA government poured millions of dollars into improving math and science education. The instructional materials developed with these funds were usually written by the subject matter experts and produced without tryouts with learners.

- ◆ In the mid-1960, Michael Scriven (1967) pointed to the need to try out drafts of instructional materials with learners prior to the time and the materials were in their final form. Scriven indicated that this process would enable educators to evaluate the effectiveness of materials while they were still in their formative stages and, if necessary, revise them before they were produced in their final form. Scriven named this tryout and revision process "formative evaluation", and contrasted it with what he labeled "summative evaluation", the testing of instructional materials after they are in their final form.

- ◆ The broadening of the field of audiovisual instruction to embrace the larger concept of instructional development and technology.

1970's	◆ A decade of consolidation: Proliferation of ID models ◆ Addition of needs assessment to the collection of steps that defined the ID process ◆ The field reached out to the literature of consulting and change agents for information to assist with its growing complexity. Graduate education programs focusing on instructional systems design grew ◆ Existing associations of professionals were redefined: DAVI became AECT; publication of Journal of instructional development
1980's	◆ The instructional applications of microcomputers have come to dominate ◆ Performance technology movement, with its emphasis on front-end analysis, on-the-job performance, business results, and non-instructional solutions to performance problems, was beginning to have an effect on instructional design practice (Rosenberg, 1988, 1990; Rossett, 1990) ◆ The growth in the utilization of instructional development by business and other non-school agencies ◆ Merrill, Li and Jones (1990) discussed the need to develop new models of instructional design to accommodate the interactive capabilities of this technology → computers began to be used as tools to automate some instructional design tasks
1990's	◆ The influence of the performance technology movement: broadening the scope of the instructional design field to include analysis of the causes of performance problems and non-

instructional solution

◆ Growing interest in constructivism. The instructional principles includes:

- Solve complex and realist problems
- Examine the problems from multiple perspectives
- Take ownership of the learning process
- Become aware of their own role in the knowledge construction process (Driscoll, 2000)
- How consideration of constructivist principles can enhance instructional design practices (Coleman, Perry and Schwen, 1997; Dick, 1996; Lebow, 1993; Lin et al., 1996).

◆ Use and development of electronic performance support systems (computer-based systems designed to provide workers with the help they need to perform certain job tasks, at the time they need that help, and in a form that will be most helpful)

- Information base
- Intelligent coaching and expert advisement systems
- Customized performance support tools that automate and greatly simplify many job tasks

◆ Rapid prototyping: this design technique has been advocated as a means of producing quality instructional materials in less time than is required when more conventional instructional design techniques are employed

- The rapid prototyping process involves quickly developing a prototype product in the very early stages of an instructional design project

- Then going through a series of rapid tryout and revision cycles until an acceptable version of the product is produced (Gustafson & Branch, 1997a; Jones and Richey, 2000)

◆ Use of the Internet for distance learning

- The programs cannot be online replicas of the instruction delivered in classrooms; instead such programs must be carefully designed in light of the instructional features that can, and cannot, be incorporated into Internet-based courses

◆ Knowledge Management § Rossett (1999): knowledge management involves identifying, documenting, and disseminating explicit and tacit knowledge within an organization in order to improve the performance of that organization.

- Current-day technologies such as database programs, groupware, and intranets allow organizations to "manage" (i.e. collect, filter, and disseminate) such knowledge and expertise in ways that were not previously possible.
- Rosenberg (2001): designing training programs vs. creating knowledge management systems
- Rossett and Donello (1999): instructional designers and other training professionals not only will be responsible for improving human performance, but also will be responsible for locating and improving access to useful organizational knowledge.
- Reiser (2001) the growing interest in knowledge management is likely to change and perhaps expand the

	types of tasks instructional designers are expected to undertake.
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DIFFERENCE BETWEEN EDUCATIONAL TECHNOLOGY AND INSTRUCTIONAL TECHNOLOGY

The main difference between educational technology and information technology is that educational technology refers to the use of technological tools in the process of learning and teaching while information technology refers to anything related to computing technology, such as hardware, software, networking, and the Internet.

We live in a technologically advanced world, and technology has become a crucial part of our lives. Educational technology is the creation, use, and management of technological processes and educational resources to help improve learners' academic performance.

Components of educational technology

There are several educational approaches in technologies and there is great overlap among them. The educational process does not remain untouched by these advances. It has necessitated introduction of these approaches in technology in the field of education

HARDWARE APPROACH OF EDUCATIONAL TECHNOLOGY

The hardware approach refers to the use of machines and other mechanical devices in the process of education. Its origin lies in the application of “physical science” to education and training system. The process of teaching-learning has been gradually mechanized through the use of teaching machines, radio, television, tape recorder, video-tape, projectors etc. The teacher can deal with a larger group of students at the same time by his discourse through these machines.

BASIS OF HARDWARE APPROACH

Hardware Approach has physical science and applied— engineering as its basis. Hardware Approach has mechanised the whole teachinglearning process.— Hardware Approach adopts a Product-oriented Approach— Hardware Approach has the potential to hand over the educational benefits to the mass with greater ease and economy.

CHARACTERISTICS OF HARDWARE APPROACH

- Silverman, called this type of educational technology 'Relative Technology'. Based on physical science and applied engineering field approach. The concept of hardware approach is derived from the application of “physical science” to education.
- The new mechanism of teaching-learning with improved technology as its basis.

SOFTWARE APPROACH OF EDUCATIONAL TECHNOLOGY

The pioneering work in software approach was done by Skinner and other behaviourists. The programmes which such a technology produces are often called software. Software Approach is also termed as Instructional Technology or Teaching Technology or Behavioural Technology. It originates from behavioural sciences and their applied aspects concerning psychology of learning. The software approach used the principles of psychology for building in the learners a complex repertory of knowledge or modifying his behaviour. Psychology of learning provides solid technology for bringing desirable behavioural changes in the pupils and serves the cause of education of laying down definite instructional procedure, teaching behaviour and behaviour modification devices.

CHARACTERISTICS OF SOFTWARE APPROACH

This view of educational technology is closely associated with the modern principles of programmed learning and is characterised by task analysis, writing precise objectives, selection of appropriate learning strategies, reinforcement of correct responses and constant education. Silverman termed this educational technology as 'constructive educational technology.' Also known as 'Management Technology'. A modern approach in educational administration and organisation. It has brought to educational management a scientific approach for solving educational administrative problems. Origin of software approach lies in the application of 'behavioural science' to the education. It refers to the application of teaching-learning principles in the shaping of behaviour. Its application while writing objectives in behavioural terms, selection of appropriate teaching, strategies, reinforcement for correct response etc

Role of hardware and software technologies in modern educational practices

1. Making the task of teaching-learning interest, purposeful and productive:
2. Suggesting suitable teaching-learning methods, devices and strategies based on psychology of teaching-learning. Suggesting suitable maxims and principle of teaching-learning based on the theory and practice of technology of teachinglearning.
3. Putting various types of audio-visual aid and materials and equipment at the disposal of teachers and learners. Providing a variety of instructional and self-learning material suiting the varying needs of teaching-learning situations and individuality of the teacher and learners.

UNIT – II

LEARNING THEORIES AND MODELS FOR INSTRUCTIONAL DESIGN

Behavioural Learning Theories, Social Learning Theories– Cognitive and constructivist Learning Theories –Theory of multiple intelligences and its implications for instructional design – Developing a personal learning theory -Instructional Design Models: ADDIE Model, System model, ASSURE Model, ARCS Model, Reflective instructional design models

Behavioural Learning Theories

Behaviorism is an approach to psychology that combines elements of philosophy, methodology, and theory. It emerged in the early twentieth century as a reaction to mentalistic psychology, which often had difficulty making predictions that could be tested using rigorous experimental methods. The primary tenet of behaviorism, as expressed in the writings of John B. Watson, B. F. Skinner, and others, is that psychology should concern itself with the observable behavior of people and animals, not with unobservable events that take place in their minds.

The behaviorist school of thought maintains that behaviors as such can be described scientifically without recourse either to internal physiological events or to hypothetical constructs such as thoughts and beliefs. From early psychology in the 19th century, the behaviorist school of thought ran concurrently and shared commonalities with the psychoanalytic and Gestalt movements in psychology into the 20th century; but also differed from the mental philosophy of the Gestalt psychologists in critical ways. Its main influences were Ivan Pavlov, who investigated classical conditioning although he did not necessarily agree with behaviorism or behaviorists, Edward Lee Thorndike, John B. Watson who rejected introspective methods and sought to restrict psychology to experimental methods, and B.F. Skinner who conducted research on operant conditioning.

In the second half of the 20th century, behaviorism was largely eclipsed as a result of the cognitive revolution. While behaviorism and cognitive schools of psychological thought may not agree theoretically, they have complemented each other in practical therapeutic applications, such as in cognitive–behavioral therapy that has demonstrable utility in treating certain pathologies, such as simple phobias, PTSD, and addiction. In addition, behaviorism sought to create a comprehensive model of the stream of behavior from the birth of a human to their death. Behaviorism focuses on one particular view of learning: a change in external behavior

achieved through a large amount of repetition of desired actions, the reward of good habits and the discouragement of bad habits. In the classroom this view of learning led to a great deal of repetitive actions, praise for correct outcomes and immediate correction of mistakes. In the field of language learning this type of teaching was called the audio-lingual method, characterized by the whole class using choral chanting of key phrases, dialogues and immediate correction.

2.1. Classical Conditioning Classical conditioning (also Pavlovian conditioning or respondent conditioning) is a kind of learning that occurs when a conditioned stimulus (CS) is paired with an unconditioned stimulus (US). Usually, the CS is a neutral stimulus (e.g., the sound of a tuning fork), the US is biologically potent (e.g., the taste of food) and the unconditioned response (UR) to the US is an unlearned reflex response (e.g., salivation). After pairing is repeated (some learning may occur already after only one pairing), the organism exhibits a conditioned response (CR) to the CS when the CS is presented alone. The CR is usually similar to the UR, but unlike the UR, it must be acquired through experience and is relatively impermanent. Classical conditioning differs from operant or instrumental conditioning, in which a behavior is strengthened or weakened, depending on its consequences (i.e., reward or punishment).

A classic experiment by Pavlov exemplifies the standard procedure used in classical conditioning. First Pavlov observed the UR (salivation) produced when meat powder (US) was placed in the dog's mouth. He then rang a bell (CS) before giving the meat powder. After some repetitions of this pairing of bell and meat the dog salivated to the bell alone, demonstrating what Pavlov called a conditional response, now commonly termed conditioned response or CR. Ivan Pavlov provided the most famous example of classical conditioning. During his research on the physiology of digestion in dogs, Pavlov developed a procedure that enabled him to study the digestive processes of animals over long periods of time. He redirected the animal's digestive fluids outside the body, where they could be measured. Pavlov noticed that the dogs in the experiment began to salivate in the presence of the technician who normally fed them, rather than simply salivating in the presence of food. Pavlov called the dogs' anticipated salivation, psychic secretion. From his observations he predicted that a stimulus could become associated with food and cause salivation on its own, if a particular stimulus in the dog's surroundings was present when the dog

was given food. In his initial experiments, Pavlov rang a bell and then gave the dog food; after a few repetitions, the dogs started to salivate in response to the bell. Pavlov called the bell the conditioned (or conditional) stimulus (CS) because its effects depend on its association with food. He called the food the unconditioned stimulus (US) because its effects did not depend on previous experience. Likewise, the response to the CS was the conditioned response (CR) and that to the US was the unconditioned response (UR). The timing between the presentation of the CS and US affects both the learning and the performance of the conditioned response. Pavlov found that the shorter the interval between the ringing of the bell and the appearance of the food, the stronger and quicker the dog learned the conditioned response. Example of Conditioned Stimulus (CS) and Unconditioned Stimulus (US) Learning is fastest in forward conditioning. During forward conditioning, the onset of the CS precedes the onset of the US in order to signal that the US will follow. Two common forms of forward conditioning are delay and trace conditioning.

Delay conditioning: In delay conditioning the CS is presented and is overlapped by the presentation of the US.

Trace conditioning: During trace conditioning the CS and US do not overlap. Instead, the CS begins and ends before the US is presented. The stimulus-free period is called the trace interval. It may also be called the conditioning interval.

2.2. Operant Conditioning Operant conditioning (or instrumental conditioning) is a type of learning in which an individual's behavior is modified by its antecedents and consequences. Mechanisms of instrumental conditioning suggest that the behavior may change in form, frequency, or strength. The expressions operant behavior and respondent behavior were popularized by B. F. Skinner. The former refers to an item of behavior that is initially spontaneous, rather than a response to a prior stimulus, but whose consequences may reinforce or inhibit recurrence of that behavior. Operant conditioning is distinguished from classical conditioning (or respondent conditioning) in that operant conditioning deals with the reinforcement and punishment to change behavior.

Operant behavior operates on the environment and is maintained by conditioning of reflexive (reflex) behaviors which are also elicited by antecedent conditions, while classical conditioning is maintained by its antecedents and consequences. Behaviors

conditioned through a classical conditioning procedure are not maintained by consequences. They both, however, form the core of behavior analysis and have grown into professional practices. B.F. Skinner is the person whose work is most often cited in connection with operant conditioning.

To implement his empirical approach, Skinner invented the operant conditioning chamber in which subjects such as pigeons and rats were isolated from extraneous stimuli and free to make one or two simple, repeatable responses. Another invention, the cumulative recorder, produced a graphical record of these responses from which response rates could be estimated. These records were the primary data that Skinner and his colleagues used to explore the effects on response rate of various reinforcement schedules. A reinforcement schedule may be defined as any procedure that delivers a reinforcer to an organism according to some well-defined rule. The effects of schedules became, in turn, the basic experimental data from which Skinner developed his account of operant conditioning. He also drew on many less formal observations of human and animal behavior.

Social Learning Theory

Social learning theory states that learning is a cognitive process that takes place in a social context and can occur purely through observation or direct instruction, even in the absence of motor reproduction or direct reinforcement. In addition to the observation of behavior, learning also occurs through the observation of rewards and punishments, a process known as vicarious reinforcement. The theory expands on traditional behavioral theories, in which behavior is governed solely by reinforcements, by placing emphasis on the important roles of various internal processes in the learning individual. Within this context, Albert Bandura studied learning processes that occurred in interpersonal contexts and were not adequately explained by theories of operant conditioning or existing models of social learning, such as the work of Julian Rotter. Specifically, Bandura argued that the weaknesses of learning approaches that discount the influence of social variables are nowhere more clearly revealed than in their treatment of the acquisition of novel responses.

Skinner's explanation of the acquisition of new responses relied on the process of successive approximation, which required multiple trials, reinforcement for components of behavior, and gradual change. Rotter's theory proposed that the

likelihood of a behavior occurring was a function of the subjective expectancy and value of the reinforcement. This model assumed a hierarchy of existing responses and thus did not (according to Bandura) account for a response that had not yet been learned. Bandura began to conduct studies of the rapid acquisition of novel behaviors via social observation, the most famous of which were the Bobo doll experiments. Social learning theory integrated behavioral and cognitive theories of learning in order to provide a comprehensive model that could account for the wide range of learning experiences that occur in the real world. As initially outlined by Bandura, key tenets of social learning theory are as follows:

1. Learning is not purely behavioral; rather, it is a cognitive process that takes place in a social context.
2. Learning can occur by observing a behavior and by observing the consequences of the behavior (vicarious reinforcement).
3. Learning involves observation, extraction of information from those observations, and making decisions about the performance of the behavior (observational learning or modelling). Thus, learning can occur without an observable change in behavior.
4. Reinforcement plays a role in learning but is not entirely responsible for learning.
5. The learner is not a passive recipient of information. Cognition, environment, and behavior all mutually influence each other (reciprocal determinism). Social learning theory draws heavily on the concept of modeling, or learning by observing a behavior.

Bandura outlined three types of modeling stimuli: Live model in which an actual person is demonstrating the desired behaviour

Verbal instruction in which an individual describes the desired behavior in detail and instructs the participant in how to engage in the behavior Symbolic in which modeling occurs by means of the media, including movies, television, Internet, literature, and radio. Stimuli can be either real or fictional characters. Exactly what information is gleaned from observation is influenced by the type of model, as well as a series of cognitive and behavioral processes, including:

Attention - In order to learn, observers must attend to the modeled behavior. Attention is impacted by characteristics of the observer (e.g., perceptual abilities, cognitive abilities, arousal, past performance) and characteristics of the behavior or event (e.g., relevance, novelty, affective valence, and functional value).

Retention - In order to reproduce an observed behavior, observers must be able to remember features of the behavior. Again, this process is influenced by observer characteristics (cognitive capabilities, cognitive rehearsal) and event characteristics (complexity).

Reproduction - To reproduce a behavior, the observer must organize responses in accordance with the model. Observer characteristics affecting reproduction include physical and cognitive capabilities and previous performance.

Motivation - The decision to reproduce (or refrain from reproducing) an observed behavior is dependent on the motivations and expectations of the observer, including anticipated consequences and internal standards.

An important factor in social learning theory is the concept of reciprocal determinism. This notion states that just as an individual's behavior is influenced by the environment, the environment is also influenced by the individual's behavior. In other words, a person's behavior, environment, and personal qualities all reciprocally influence each other. For example, a child who plays violent video games will likely influence their peers to play as well, which then encourages the child to play more often. This could lead to the child becoming desensitized to violence.

Constructivist learning theories

Constructivism is 'an approach to learning that holds that people actively construct or make their own knowledge and that reality is determined by the experiences of the learner'. Typically, this continuum is divided into three broad categories: Cognitive constructivism based on the work of Jean Piaget, social constructivism based on the work of Lev Vygotsky, and radical constructivism.

Some constructivist theories

Genetic epistemology]

Jean Piaget (1896–1980), the creator of genetic epistemology, argued that positions of knowledge are grown into; that they are not given a priori, as in Kant's epistemology, but rather that knowledge structures develop through interaction. Piaget's theory is ultimately falsificationist: "behaviour is the motor of evolution". His major publications spanned fifty years from the 1920s to the 1970s. Piaget's approach to constructivism was further developed in neo-Piagetian theories of cognitive development.

Personal construct theory

George Kelly (1905–1967), the creator of personal construct theory, was concerned primarily with the epistemic role of the observer in interpreting reality. He argued that the way we expect to experience the world alters how we feel about it and act. In other words, we order ourselves by ordering our thoughts. The goal of his therapeutic approach was therefore to allow the client to explore their own minds, acting as a facilitator of the exploration of their own meanings, or "constructs". Kelly's major publications were published in the 1950s and 1960s.

Post-rationalist cognitive therapy

Vittorio Guidano (1944–1999), the creator of post-rationalist cognitive therapy, hypothesized that the mind creates a complex system of abstract rules responsible for the concrete and particular qualities of our conscious experience. His major publications were published in the 1980s and 1990s. In the years since Guidano's contributions, there has been much debate among embodied cognition researchers about to what degree cognition is abstract or amodal versus modal.

Cognitive learning theories

Cognitive learning is an active style of learning that focuses on helping you learn how to maximize your brain's potential. It makes it easier for you to connect new information with existing ideas hence deepening your memory and retention capacity.

Components of Cognitive Learning

Traditional learning mainly focuses on memorization instead of trying to achieve mastery in a particular subject.

The following are fundamental aspects of cognitive learning:

1.Comprehension

For cognitive learning to be efficient and benefit you, understand the reason why you are learning a specific subject in the first place.

2. Memory

Cognitive learning discourages cramming of information, which is very ineffective in education. Having a deep understanding of a subject improves your ability to relate new knowledge with previous experiences or information.

3. Application

Cognitive learning strategies help you apply new information or skills in life situations. They encourage you as you continue to develop problem-solving skills.

Today, cognitive learning theory is dominant in psychology. It is broken down into two categories.

Social Cognitive Theory

This theory helps us understand how people are influenced and their influence on the environment.

One of the major components of social cognitive theory is observational learning. It is the process of learning others' desirable and undesirable behaviors through observation.

It is a quick way of acquiring information when you individually take action. A person who demonstrates behavior for another person is known as a model.

These may be real people such as teachers, our peers, and supervisors, or symbolic models, also known as fictional characters that influence an observer's behavior.

Observational learning teaches people both positive and negative behaviors. For example, a manager within a company can teach the employees how they are supposed to behave ethically and be socially conscious when interacting and dealing

with rude customers. Moreover, the manager can also train his/her employees on the different procedures that they can take in case of fire or other low probability hazardous scenarios.

Cognitive Behavioral Theory

It explains how the thoughts, feelings, and behaviour of a person interact with each other. Thoughts lead to particular emotions, which in turn lead to specific behavioural responses. When we change our thoughts, we can change our emotions and then our behaviours. It also works in reverse where changing how we behave leads to changes in our feelings and, ultimately, our thoughts.

What is Multiple Intelligences Theory?

- Howard Gardner's theory of multiple intelligences proposes that people are not born with all of the intelligence they will ever have.
- This theory challenged the traditional notion that there is one single type of intelligence, sometimes known as “g” for general intelligence, that only focuses on cognitive abilities.
- To broaden this notion of intelligence, Gardner introduced eight different types of intelligences consisting of: Linguistic, Logical/Mathematical, Spatial, Bodily-Kinesthetic, Musical, Interpersonal, Intrapersonal, and Naturalist.
- Gardner notes that the linguistic and logical-mathematical modalities are most valued in school and society.
- Gardner also suggests that there may other “candidate” intelligences—such as spiritual intelligence, existential intelligence, and moral intelligence—but does not believe these meet his original inclusion criteria. (Gardner, 2011).

The theory of multiple intelligences was first proposed by Howard Gardner in his 1983 book “Frames of Mind”, where he broadens the definition of intelligence and outlines several distinct types of intellectual competencies.

1. Linguistic Intelligence (“word smart”)

Linguistic Intelligence is a part of Howard Gardner's multiple intelligence theory that deals with sensitivity to the spoken and written language, ability to learn languages, and capacity to use language to accomplish certain goals.

People with linguistic intelligence, such as William Shakespeare and Oprah Winfrey, have an ability to analyze information and create products involving oral and written language such as speeches, books, and memos.

Potential Career Choices

Careers could dominate with linguistic intelligence:

Lawyer ,Speaker, Author ,Journalist,Curator

2 Logical-Mathematical Intelligence (“number/reasoning smart”)

Logical-mathematical intelligence refers to the capacity to analyze problems logically, carry out mathematical operations, and investigate issues scientifically.

People with logical-mathematical intelligence, such as Albert Einstein and Bill Gates, have an ability to develop equations and proofs, make calculations, and solve abstract problems.

Potential Career Choices

Careers could dominate with logical-mathematical intelligence:

Mathematician ,Accountant, Statistician ,Scientist, Computer Analyst

3 Spatial Intelligence (“picture smart”)

Spatial intelligence features the potential to recognize and manipulate the patterns of wide space (those used, for instance, by navigators and pilots) as well as the patterns of more confined areas, such as those of importance to sculptors, surgeons, chess players, graphic artists, or architects.

People with spatial intelligence, such as Frank Lloyd Wright and Amelia Earhart, have an ability to recognize and manipulate large-scale and fine-grained spatial images.

Potential Career Choices

Careers could dominate with spatial intelligence:

Pilot Surgeon ,Architect ,Graphic Artist ,Interior Decorator

4 Bodily-Kinesthetic Intelligence (“body smart”)

Bodily kinesthetic intelligence is the potential of using one’s whole body or parts of the body (like the hand or the mouth) to solve problems or to fashion products.

People with bodily-kinesthetic intelligence, such as Michael Jordan and Simone Biles, have an ability to use one’s own body to create products, perform skills, or solve problems through mind–body union.

Potential Career Choices

Careers you could dominate with your bodily-kinesthetic intelligence:

Dancer ,Athlete, Surgeon ,Mechanic ,Carpenter ,Physical Therapist

5 Musical Intelligence (“music smart”)

Musical intelligence refers to the skill in the performance, composition, and appreciation of musical patterns.e.g Singer

Composer, Musician

6 Interpersonal Intelligence (“people smart”)

Interpersonal intelligence is the capacity to understand the intentions, motivations, and desires of other people and consequently to work effectively with others.

People with interpersonal intelligence, such as Mahatma Gandhi and Mother Teresa, have an ability to recognize and understand other people’s moods, desires, motivations, and intentions.

Eg .Teacher ,Psychologist ,Manager ,Salespeople ,Public Relations

7. Intrapersonal Intelligence (“self smart”)

Intrapersonal intelligence is the capacity to understand oneself, to have an effective working model of oneself-including own’s desires, fears, and capacities—and to use such information effectively in regulating one’s own life.

People with intrapersonal intelligence, such as Aristotle and Maya Angelou, have an ability to recognize and understand his or her own moods, desires, motivations, and intentions.

This type of intelligence can help a person to understand which life goals are important and how to achieve them.

e.g Therapist ,Psychologist, Counselor ,Entrepreneur ,Clergy

8 Naturalist intelligence (“nature smart”)

Naturalistic intelligence involves expertise in the recognition and classification of the numerous species—the flora and fauna—of his or her environment. Careers could dominate with naturalist intelligence: Botanist, Biologist ,Astronomer ,Meteorologist ,Geologist

People with naturalistic intelligence, such as Charles Darwin and Jane Goddall, have an ability to identify and distinguish among different types of plants, animals, and weather formations that are found in the natural world.

Some responses to this criticism include that the Multiple Intelligences theory doesn’t dispute the existence of the “g” factor; it proposes that it is equal along with the other intelligences. Many critics overlook the inclusion criteria set forth by Gardner.

Instructional model

The Instructional Framework, identifies and illustrates the interrelationship among instructional approaches that, properly used, are acknowledged to be consistent with sound educational practice. The approaches are referenced to the goals of education and apply to the objectives of the various curricula. Instructional skills are the most specific category of teaching behaviors. These are used constantly as part of the total process of instruction. They are necessary for procedural purposes and for structuring appropriate learning experiences for students. No matter how experienced or how effective a teacher may be, the development and refinement of these skills and processes is a continual challenge.

ADDIE MODEL

The term, ADDIE, is an acronym for a five-step process: Analysis, Design, Development, Implementation, evaluation.

The five components of the Addie Model are:

Analysis

The Analysis phase can be considered as the “Goal-Setting Stage.” The focus of the designer in this phase is on the target audience. It is also here that the program matches the level of skill and intelligence that each student/participant shows. This is to ensure that what they already know won’t be duplicated, and that the focus will instead be on topics and lessons that students have yet to explore and learn. In this phase, instructors distinguish between what the students already know and what they should know after completing the course.

Several key components are to be utilized to make sure analysis is thorough. Course texts and documents, syllabi and the internet are to be employed. With the help of online materials such as web courses, a structure can be determined as the primary guide for the syllabus. At the end of the program, instructional analysis will be conducted to determine what subjects or topics are to be included. The Analysis Phase generally addresses the following issues and questions:

1. What is the typical background of the students/participants who will undergo the program? Personal and educational information such as age, nationality, previous experiences and interests should be determined. What is the target group? What are the educational goals, past knowledge levels, experiences, ages, interests, cultural background etc. of the learners?
2. What do the students need to accomplish at the end of the program? What are the learner’s needs?

Design

This stage determines all goals, tools to be used to gauge performance, various tests, subject matter analysis, planning and resources. In the design phase, the focus is on learning objectives, content, subject matter analysis, exercise, lesson planning, assessment instruments used and media selection.

The approach in this phase should be systematic with a logical, orderly process of identification, development and evaluation of planned strategies which target the attainment of the project's goals. It should follow a very specific set of rules, and each element of the instructional design plan must be executed with attention to detail. Being a stickler for the details is crucial to the success of the design stage. This systematic approach makes sure that everything falls within a rational and planned strategy, or set of strategies, that has the ultimate goal of reaching the project's targets. During the design stage, the IDs need to determine:

- Different types of media to be used. Audio, Video and Graphics are prime examples. Are third party resources going to be utilized or will the IDs create their own? Will you prepare the teaching learning material?
- Various resources at hand required to complete the project. What are the available resources at your disposal for completing the project?
- Level and types of activity to be generated during the study. Is it going to be collaborative, interactive or on a per participant basis?

Development

The Development stage starts the production and testing of the methodology being used in the project. In this stage, designers make use of the data collected from the two previous stages, and use this information to create a program that will relay what needs to be taught to participants. If the two previous stages required planning and brainstorming, the Development stage is all about putting it into action. This phase includes three tasks, namely drafting, production and evaluation.

Development thus involves creating and testing of learning outcomes. It aims to address the following questions:

- Is the time frame being adhered to in relation to what has been accomplished in terms of material? Are you creating materials as per schedule?
- Do you see team work across various participants? Are the members working effectively as a team?
- Are participants contributing as per their optimal capacity?
- Are the materials produced up to task on what they were intended for?

Implementation

The implementation stage reflects the continuous modification of the program to make sure maximum efficiency and positive results are obtained. Here is where IDs strive to redesign, update, and edit the course in order to ensure that it can be delivered effectively. “Procedure” is the key word here. Much of the real work is done here as IDs and students work hand in hand to train on new tools, so that the design can be continuously evaluated for further improvement. No project should run its course in isolation, and in the absence of proper evaluation from the IDs. Since this stage gains much feedback both from IDs and participants alike, much can be learned and addressed

Design evaluation is done in the implementation phase. Designers play a very active role in this stage, which is crucial for the success of the project. Developers should consistently analyze, redesign and enhance the product to ensure effective product delivery. Meticulous monitoring is a must. Proper evaluation of the product, course or program, with necessary and timely revisions, is done in this phase. When instructors and learners actively contribute during the implementation process, instantaneous modifications can be made to the project, thus making the program more effective and successful.

The following are examples of what can be determined:

- Advise on your preferred method of record keeping, as well as the actual data you would like to mine from the experience of students interfacing with the project.
- What is the emotional feedback given to you by teachers and students during initial demonstration of the project? Are they genuinely interested, eager, critical or resistant?
- As the project proceeds, do you see that IDs are able to grasp the topic immediately or do they need help?

Evaluation

The last stage of the ADDIE method is Evaluation. This is the stage in which the project is being subjected to meticulous final testing regarding the what, how, why, when of the things that were accomplished (or not accomplished) of the entire

project. This phase can be broken down into two parts: Formative and Summative. The initial evaluation actually happens during the development stage. The Formative phase happens while students and IDs are conducting the study, while the Summative portion occurs at the end of the program. The main goal of the evaluation stage is to determine if the goals have been met, and to establish what will be required moving forward in order to further the efficiency and success rate of the project.

Every stage of the ADDIE process involves formative evaluation. This is a multidimensional—and essential—component of the ADDIE process. Evaluation is done throughout the implementation phase with the aid of the instructor and the students. After implementation of a course or program is over, a summative evaluation is done for instructional improvement. Throughout the evaluation phase the designer should ascertain whether problems relevant to the training program are solved, and whether the desired objectives are met. While often overlooked due to time constraints and monetary reasons, Evaluation is an essential step of the whole ADDIE method as it aims to answer the following questions:

- Determine the categories that will be established to evaluate the effectiveness of the project (i.e. improved learning, increased motivation etc.) On what factors or criteria will the effectiveness of project be determined?
- Determine the way you will implement data collection, as well as the timing at which it will be effectively made. When will the data related to the project's overall effectiveness be collected and how?

Advantages of using the ADDIE model in designing instruction?

While ADDIE may be a common instructional design model, it comes with its different strengths and weaknesses. The model is viewed as appealing to some because of its flexibility, easy-modifying process, and ability to be used with other models.

ASSURE MODEL

The ASSURE model is a six-step Instructional Systems Design (ISD), intended to help teachers utilize technology and media in the classroom. ASSURE is a way to ensure that the learning environment is appropriate for students. ASSURE can be used in lesson plans to improve your own teaching and your

students' learning while using technology. The ASSURE acronym stands for these important components:

- A- Analyze Learners
- S- State Objectives
- S- Select Instructional Methods, Media, and Materials
- U- Utilize Media and Materials
- R- Require Learner Participation
- E- Evaluate and Revise

A – Analyze Learners

The first step in the process is that the teacher should analyze the attributes of her learners. There should be a focus on those learner characteristics which are associated with the learning outcomes desired. The information gathered will help you in the decisions that you make with respect to the other steps in the process. When you determine the character of the learners, it will guide you in choosing specific strategies and resources to aid the learning process.

The analysis of your learners should include:

- The general attributes of your learners, such as age, academic abilities, gender, interests, etc.
- Prior competencies
- Learning styles, such as auditory, visual, and tactile

S – State Standards and Objectives

After the analysis of the learner attributes, the teacher must state standards and objectives for the learning module. This statement consists of a specification of what the learners will be able to do as a result of the instruction.

To be more concrete about things, this statement will focus on what the learner will know or be able to do as a result of the instruction. An example of this is with

medical students. The learners will be able to name at least two databases and two search techniques that they can use to locate medical evidence for particular cases.

S – Select Strategies, Technology, Media, and Materials

The second “s” in the acronym stands for select strategies, technology, media, and materials. Given what your learning objectives are, it’s necessary to pick instructional strategies, technology, and media that will bring about the results that you want.

U – Utilize Technology, Media, and Materials

This step in the ASSURE process concerns making a plan as to how you will utilize the technology, media, and materials that you have selected. As with all of the instructional steps, you must make sure that your plans contribute towards producing the objectives that you have laid down.

R – Require Learner Participation

This step actually belongs within earlier steps. It requires that you make plans to how you are going to actively engage your students in the material that you are teaching. This needs to be figured out both at the class level and the individual level.

E – Evaluate and Revise

The final step in the ASSURE process is just as crucial as all of the others. In this step, you evaluate the impact of your teaching on student learning. This includes an evaluation of your teaching strategies and the technology, media, and materials that you used. The following questions are useful to ask during this evaluation:

- Did your lesson meet the learning objectives that you planned? How will you determine whether the students reach the objectives? Is your way of assessing the students in line with your learning objectives?
- Can this lesson be improved? How? How are you going to assess the weaknesses in your presentation?

The ASSURE model is a fantastic way to plan effective, media-rich lessons. ASSURE is based on Robert Gagne’s “Events of Instruction.” The model is Constructivism-based; in other words, it is a framework that assumes passive learners

will not learn at their best; learners must be actively participating in their own learning, interacting with their environment and peers. ASSURE also recognizes the different learning styles of all students.

REFLECTIVE INSTRUCTIONAL DESIGN

Reflection on teaching provides a focus for analyzing and developing learning and teaching [Department of education for Northern Ireland, 1999].

Reflection refers to an activity or process in which an experience is recalled, considered and evaluated, usually in relation to a broader purpose.

Reflective teaching is a process where teachers think over their teaching practices, analyzing how some thing was taught and how the practice might be improved or changed for better learning outcomes. A reflective teacher reflects on – “what is currently being done?, why it is being done ?, and how well students are learning?”. The reflection can be used to learn more about your own practice or to focus on a problem students are having.

METHODS OF REFLECTION

Method 1: keep a journal

After each class take some notes about what was taught and how students responded, positive or negative? Did they understand the material? And note that what you could do differently?

Method 2: get feedback (peer observation)

After a lesson or activity or at the end of the class, ask students to briefly and honestly describe what they learned and what, if anything didn't work well in the lesson. Allow them to provide the feedback and collect the responses and takes notes in your journal on their observations for improving or changing your practices.

You can also ask a colleague for honest feedback to improve yourself.

Method 3: blogging

Having a blog allows educators to share their thought process with others and get feedback from similarly passionate educators. Connecting with other great educators through blogging has made learning and growing a collaborative effort.

Method 4 : recording

Audio and video recordings and lessons can also provide a basis for reflection. The recorded materials allow us to think hard about what I 'have done the past week.

Method 5 : self-reports

Self- reporting involves completing an inventory or check list in which the teacher indicated which teaching practices were used within a lesson or within a specified time period and how often they were employed. It allows teachers to make regular assessment of what they are doing in the class room.

Method: 6 Autobiographies

These consist of small groups of around 12 student teachers who meet for an hour each week. During this period of time each student works at creating a written account of his or her educational experience and the weekly meetings are used to enable each person to read a passage from his or her autobiography so that it can be supported, by the peers and the teacher.

Method :7 collaborative diary keeping

Through this one kept their own diaries on their teaching. Read each other's diaries and discussed their teaching and diary keeping experiences on a weekly basis. It raises our awareness of classroom processes and prompted us to consider those processes more deeply than we may otherwise have. It also provides, encouragement and support.

The process of developing of reflective teaching practice can be represented as five stages (Stanley 1998: 586-588):

1. Engaging with reflection,

2. Thinking reflectively,
3. Using reflection,
4. Sustaining reflection,
5. Practicing reflection.

UNIT – III

MOBILE LEARNING

Meaning and Definition of mobile technologies – Use of Smart Phones in learning-applications of android phone, tablets in teaching learning- - Smart Phones in Schools, Colleges and Universities – Smart Phones in Open schools, Colleges and Universities – Mobile phones in distance learning -Role of social media, – Smart class room: Features, prerequisite, importance and advantages

Mobile learning

Introduction

Mobile learning is the ability to obtain or provide educational content as personal pocket devices such as Personal Digital Assistants (PDAs), smart phones and mobile phones. Educational content refers to digital learning assets which include any form of content or media made available on a personal device. With our ever increasing capacity in the world, mobile technology seems to be at the fore-front. It is very hard to believe that technology didn't even exist 100 years ago, now it is the most used in our society. In the near future, there will be more mobile phones than there are people in the world. Almost the entire population will have a mobile phone in their hands.

Mobile learning is emerging as one of the solutions to the challenges faced by education. With a variety of tools and resources always available, mobile learning provides increased options for the personalization of learning. Mobile learning in

classrooms often has students working interdependently, in groups, or individually to solve problems, to work on projects, to meet individual needs, and to allow for student voice and choice. With access to so much content anytime and anywhere, there are plenty of opportunities for formal and informal learning, both inside and outside the classroom. Study showed that notebooks, mobile Tablets, iPod touch, and iPads are very popular devices for mobile learning because of their cost and availability of apps. They are used for collecting students' responses (clickers), reading electronic books and websites, recording reflections, documenting field trips, collecting and analyzing data, and much more. One of the causes of acceptance mobile learning is that it uses devices: which citizens are used to carrying everywhere with them, which they regard as friendly and personal devices, which are cheap and easy to use.

Definition of Mobile technologies

“Mobile technology refers to devices that are both transportable and offer instantaneous access to information”.-coates et al

Types of mobile networks

Cellular networks

Radio networks using distributed cell towers that enable mobile devices (cell phones) to switch frequencies automatically and communicate without interruption across large geographic areas. The same basic switching capability enables cellular networks to accommodate many users across a limited number of radio frequencies.

4G networking

The current cellular service standard for most wireless communication. It uses packet switching technology, which organizes data into parts or packets for transmission and reassembles the information at the destination. 4G – “G” for

generation — is reported to be 10x faster than 3G — and 5G, faster still, is coming. 5G uses a set of aggregated frequency bands to unlock bandwidth and is approximately 20 xs faster than 4G.

Wi-Fi

Radio waves that connect devices to the internet through localized routers called hotspots. Short for wireless fidelity, Wi-Fi networks are like cell towers for internet access, but they don't automatically pass service without establishing a Wi-Fi connection. Most mobile devices allow for automatic switching between Wi-Fi and cellular networks depending upon availability and user preference.

Bluetooth

A telecommunications industry specification for connecting devices over short distances using short-wavelength radio waves. Bluetooth enables users to quickly connect or pair devices such as headsets, speakers, phones and other devices.

USE OF SMART PHONES IN LEARNING

1. Create short videos.

Videos of 5-20 seconds can give students a way to exercise their creative muscles. Students can create their own videos on the fly using their own mobile devices, or they can create one part of a video compilation that the teacher can then string together. Videos can express any type of learning in any style, from music videos to interviews, book trailers, historical, tutorials and stop animations.

2. Scan QR codes.

QR codes offer instant access to video, audio, websites contact info or any brief text. Most phones now come with QR code readers installed, but if you students have a phone without one, there are plenty of free QR code reader apps.

While anything with QR codes will take a bit more effort to create, students love the twist on learning. QR codes can also generate answer keys beside each problem to allow students to self-check their work.

3. Access an online dictionary and thesaurus.

Once students learn how to use dictionary apps and websites efficiently, the difference in their work is spectacular.

5. Listen to podcasts and read the news.

For the voracious student who wants to keep learning outside of class, the struggling learner who needs more exposure and everyone in between, smart phones provide instant access to civics, social studies, English, psychology, math, foreign language and science related media sources, including journals, newspapers, online news sites, podcasts, and more.

6. Use the apps, obviously.

Many mobile apps, such as memorise languages and vocabulary, make learning instantly accessible.

THE SIGNIFICANCE OF MOBILE LEARNING

Tutors who have used M-Learning programs and techniques have made the following value statements in favour of M-Learning. It is important to bring new technology into the classroom. Devices used are more lightweight than books and PCs. Mobile learning can be used to diversify the types of learning activities students partake in (or a blended learning approach). Mobile learning supports the learning process rather than being integral to it. Mobile learning can be a useful add-on tool for students with special needs. However, for SMS and MMS this might be dependent on the students' specific disabilities or difficulties involved. Mobile learning can be used as a hook to re-engage disaffected youth.

USE OF MOBILE PHONE IN SCHOOLS/COLLEGES

1. An electronic telecommunications device, often referred to as a cellular phone or cell phone. mobile phones connect to a wireless communications network through radio wave or satellite transmissions. most mobile phones provide voice communications, short message service(SMS),multimedia message service(MMS),and newer phones may also provide internet services such as web browsing and e-mail.
2. In case of emergency Students would be able to be in contact with their parents
3. College students have many reasons to consider using a cell phones, since cell phones are one of the most versatile electronics on the markets. Besides the obvious communication advantages, newer cell phones have features, such as cameras and internet access, that can help college students with all aspects of their college experience, from their studies to their social lives.

MOBILE LEARNING IN THE CONTEXT OF DISTANCE EDUCATION AND FLEXIBLE LEARNING

E-learning means learning with electronic media, i.e. via the Internet (intranet or extranet), but also via television and radio, audio and video tapes and CD-ROM. E-learning is therefore defined more narrowly than distance learning, which includes print based study materials and correspondence communication. E-learning can therefore be regarded as a subset of distance learning, but not vice versa. The printed materials which are widespread in distance learning should be understood here as a form of technology as well. The following comprehensive definition of provides a sufficient basis to distinguish between mobile learning and e-learning: "The term e - learning covers a wide set of applications and processes, including computer-based learning, Web based learning, virtual classrooms and digital collaboration.

M-Learning is characterized by the ability to learn through portable devices. Technology has continued to play a pivotal role in teaching and training, though mobile technologies and devices have their own share of advantages

and also disadvantages. There are many different types of m-learning-Communication through SMS between two mobile phones, whereby one can send or receive text messages of 160 characters. Extended form of SMS – MMS (Multimedia Messaging Service). In this technology, text messages and graphics both are included. WAP enabled mobile phones that can access the Internet through deploying protocol of international standard.

Smart class room

Smart classrooms are the classrooms enhanced with technological equipment for the purpose of better learning and teaching. Based on the equipment available smart classrooms can be categorized as follows:

- Basic Smart Classes: The classrooms with basic smart technology include gadgets like laptops or computers, projector, DVD or VCD player and a viewing screen etc.
- Intermediate Smart Classes: The intermediate smart classrooms are one step ahead of the basic technology smart classrooms. They include gadgets like a smart podium with the control panel in addition to a laptop, projector, screen and DVD or VCD player etc.
- Advanced Smart Classes: The advanced smart classrooms have all the gadgets of a basic or intermediate smart classroom but their features are very advanced, that is, they use the newest technology.
- Features in a Smart Classroom
- The equipment installed in most of the smart classrooms are:
 - Computer or Laptop: A computer or laptop is a basic and necessary requirement of a smart classroom. Instead of writing on board with a chalk or marker, teaching process is done by presentation or images or multimedia in a smart classroom.
 - Projector: it is an optical device. It projects stationery or moving objects onto a screen. They create an image by shining light through a transparent lens or by a laser.

- **Screen:** It is a surface used to display the images projected by a projector. The screens may be rigid wall-mounted screens, pull down screens, fixed frame screens, electrical screens, switchable projection screens, or mobile screens.
- **Microphone:** it is generally called as mic or mike. It is a device which converts audio signals into electrical signals. These signals are then transmitted, amplified or recorded.
- **Amplifier and Speaker:** These are the electronic devices which are used to increase the volume of a sound.
- **Podiums:** it is a platform usually made of wood which raises the person standing on it so that he becomes visual to all the audience.
- **Document Camera:** They are also called as visual presenters, visualizers, digital overheads. They are used for displaying an object to a large audience. A document camera magnifies and projects the images of a two dimensional as well as a three-dimensional object. The object is simply placed under the document camera. The camera takes its image and produces its live image by using a projector.
- **Smart Podiums:** They are also called smart boards or smart LCDs. It is an interactive pen display which can be connected to the computer or laptop externally via the USB port or RGB ports. It can be called as an external monitor with the facility of digital inking. With a smart podium, we can open documents, presentations, multimedia files and can write on them with a digital pen. We can also save our work.
- **DVD or VCD Player:** There are a large number of videos available on the internet but still there is a requirement of VCD or DVD player because there are some videos which have copyright and have to be purchased. These are often in the form of DVDs or CDs.
- **Overhead Projector:** It is a device which is used to display enlarged images of a transparent acetate sheet placed on its base on a screen. This device was very famous a few years back, but now it is being replaced by computer-based projectors.

- Advantages of Smart Classrooms
- There are many advantages of the smart classroom. Some of them are as follows:
 - Access to Online Resources: In a smart classroom, the teacher can use the resources available on the internet for the better understanding of the students. For every subject, there are numerous resources available on the internet which can be accessed by the teachers as well as the students at any time in a smart classroom. Internet plays a major role in the learning process. Today's students are curious to know about everything. They want to gain extra knowledge about the ongoing topic in the class. This is a limitation of books. The books print only the syllabus. For those who want to learn beyond the syllabus, the internet is a very useful tool. Even for the syllabus, the resources available on the internet are very helpful.
 - Digital Medium for Notes: In a regular classroom, the teacher writes on the board and the students note it down in their notebooks. In this methodology of teaching, the student's mind gets diverted in two directions, one is listening to the teacher and understanding and the other is writing or making notes for future reference. In this way, the students do not understand the topic properly or get confused or even sometimes, they do not listen to anything and just make notes. This is a very dull approach in the teaching process. But this is not the case in a smart classroom. In a smart classroom, there is a digital approach for notes. The teacher, instead of writing on the board, teachers using PowerPoint presentation, word documents, images, videos, and audios. These resources are given to the students in pen drives, CDs, or they are emailed to them. In this way, the students do not have to write for making notes. Notes are provided to them and they can devote their full concentration to the lecture.
 - Advantageous for the Absentees: If a student who studies in a regular classroom is absent for one day, it becomes difficult for him to gather all the notes of the classes he missed. Also, it becomes difficult for the teacher to

explain the previous topics to the students who were absent. The students then take a shortcut method and get the notes photocopied from other students. In this way, the students do not understand anything from the classes he missed. In a smart classroom, the lectures are recorded. Whenever a student is absent he can anytime see the recorded lecture. These recorded lectures are also uploaded on the internet which can be accessed by the students anytime by a login id and password. The notes are also in digital form, so they can be easily provided to the student.

- **Ease of Understanding:** There are many topics in the curriculum which are very difficult to understand. They cannot be just taught by using a chalk and a black blackboard. They require an interactive teaching approach. With smart classes, the teacher can use multimedia to teach that topic to the students. The students learn more from what they see rather than from what they listen. So the students understand easily and effectively all the difficult topics in a smart classroom.
- **Makes Learning Enjoyable:** If we go and look in a regular classroom, the students are feeling very sleepy. Some of the students are not even listening to the teacher. They are busy talking with their friends. In short, the class becomes very boring for them. But it is not so in a smart classroom. The use of smart technology in the class makes the classroom a fun room. The class becomes interesting and enjoyable for the students. No student feels sleepy. It makes learning a fun process. The students who do not like to go to schools also start enjoying the school.
- **Improves the Academic Performance:** It is often seen that the students studying in a smart class get a better result than the students studying in a regular class. This is so because the understanding ability in the students studying in a smart classroom is way more than other students. The use of technology in the classroom for teaching increases the understanding of the students. The topic becomes clearer and the base of the subject becomes stronger. Obviously, the

students with a better hold of the subject and with strong basic knowledge of the subject will score more in exams.

- **Communication:** The technology used in a smart classroom makes video conferencing possible in the classroom itself. In this way, the students can communicate with the person who is an expert on the subject. In various schools and colleges with the facility of smart classrooms, guest lectures are organized weekly in which the students can communicate with the experts such as professors of IITs and IIMs or the people engaged in research work. This provides the students with extra information about their subjects which beyond the scope of the textbooks. The students get to know about the ongoing issues related to their subjects. They get acquainted with the upcoming technology and theories. This proves very beneficial for them in the near future.
- **Health Friendly:** There are some teachers who are very sensitive towards the use of chalk or markers. Some of them experience skin allergies when they write with chalk and some are allergic to the chalk dust. Some teachers are not comfortable with the smell of the ink used in the markers. For these teachers smart classrooms are advantageous. There is no or very less use of markers or chalk in a smart classroom. The teaching is done by using digital or e-resources. So, there is no chance of allergy.

UNIT – IV

TECHNOLOGY INTEGRATION- TRENDS AND ISSUES

Increased online access and connectivity, Digital assistive technology – Emerging role for augmented and virtual reality in education– Blended Teaching Learning Methodologies: Use of learning management Systems (LMS) – E-folios in Learning management Systems –On line and Offline learning management Systems: Moodle and Edmodo Basics – Podcasts, wikis and reflection blogs as Teaching Learning methodologies

Digital assistive technology

Digital assistive technology service supports children and young people who require communication aids and/or technology equipment to facilitate participation in communication, learning and play activities, also including recording work effectively in the classroom. It is a multi-professional approach, primarily involving an occupational therapist, with specialist knowledge of digital assistive technology and equipment, who works with the child's therapy team, educational professionals, and the child's family.

Assessment

The specialist occupational therapist will assess the child's functional difficulties in order to make a decision on what specialist equipment will best meet their needs. Other relevant people involved with the student (ie teacher, therapists, family, etc) will be invited to attend and contribute to this assessment. The assessment will be carried out in the most natural and relevant place for the child (ie home, school, clinic, etc) and several assessment sessions may be required before a decision is made.

Intervention

It aims to provide a child's family or school staff with recommendations for appropriate technology equipment, functional goals, training and support after assessment, short-term equipment loans and, where appropriate, possible referrals to external organisations, such as charities or further specialist organisations. Relevant reviews of interventions will be offered, where appropriate, after assessment and intervention has been provided, to keep the technology provision relevant and up to date for the student.

Blended learning

Blended learning, also known as hybrid learning, is an approach to education that combines online educational materials and opportunities for interaction online with traditional place-based classroom methods. It requires the physical presence of both

teacher and student, with some elements of student control over time, place, path, or pace. While students still attend "brick-and-mortar" schools with a teacher present, face-to-face classroom practices are combined with computer-mediated activities regarding content and delivery. Blended learning is also used in professional development and training settings. Since blended learning is highly context-dependent, a universal conception of it is difficult. Some reports have claimed that a lack of consensus on a hard definition of blended learning has led to difficulties in research on its effectiveness. A well-cited study broadly defined blended learning as a mixture of online and in-person delivery where the online portion effectively replaces some of the face-to-face contact time rather than supplementing it.

Additionally, a 2015 meta-analysis that historically looked back at a comprehensive review of evidence-based research studies around blended learning, found commonalities in defining that blended learning was "considered a combination of traditional f2f [face to face] modes of instruction with online modes of learning, drawing on technology-mediated instruction, where all participants in the learning process are separated by distance some of the time." This report also found that all of these evidence-based studies concluded that student achievement was higher in blended learning experiences when compared to either fully online or fully face-to-face learning experiences.

"Blended learning" is sometimes used in the same breath as "personalized learning" and differentiated instruction.

MODELS OF BLENDED LEARNING

These models include:

- Face-to-face driver – where the teacher drives the instruction and augments with digital tools.
- Rotation – students cycle through a schedule of independent online study and face-to-face classroom time.

- Flex – Most of the curriculum is delivered via a digital platform and teachers are available for face-to-face consultation and support
- Labs – All of the curriculum is delivered via a digital platform but in a consistent physical location. Students usually take traditional classes in this model as well.
- Self-blend – Students choose to augment their traditional learning with online course work.
- Online driver – Students complete an entire course through an online platform with possible teacher check-ins. All curriculum and teaching is delivered via a digital platform and face-to-face meetings are scheduled or made available if necessary.

It is important to note that even blended learning models can be blended together and many implementations use some, many, or even all of these as dimensions of larger blended learning strategy. These models, for the most part, are not mutually exclusive. There are many components that can comprise a blended learning model, including "instructor-delivered content, e-learning, webinars, conference calls, live or online sessions with instructors, and other media and events, for example, Face book, e-mail, chat rooms, blogs, podcasting, Twitter, YouTube, Skype and web boards".

Advantages

Blended instruction is reportedly more effective than purely face-to-face or purely online classes. Blended learning methods can also result in high levels of student achievement more effective than face-to-face learning. By using a combination of digital instruction and one-on-one face time, students can work on their own with new concepts which frees teachers up to circulate and support individual students who may need individualized attention.

Blended learning often includes software that automatically collects student data and measures academic progress, providing teachers, students and parents detailed students data. Often, tests are automatically scored, providing instantaneous feedback. Student logins and work times are also measured to ensure accountability

Schools with blended learning programs may also choose to reallocate resources to boost student achievement outcomes.

Learning management system (LMS)

A learning management system (LMS) is a software application or web-based technology used to plan, implement and assess a specific learning process. It is used for e-Learning practices and, in its most common form, consists of two elements: a server that performs the base functionality and a user interface that is operated by instructors, students and administrators.

Typically, a learning management system provides an instructor with a way to create and deliver content, monitor student participation and assess student performance. A learning management system may also provide students with the ability to use interactive features such as threaded discussions, video conferencing and discussion forums.

LMSES are frequently used by businesses of all sizes, national government agencies, local governments, traditional educational institutions and online/eLearning-based institutions. The systems can improve traditional educational methods, while also saving organizations time and money. An effective system will allow instructors and administrators to efficiently manage elements such as user registration, content, calendars, user access, communication, certifications and notifications.

The Advanced Distance Learning group, sponsored by the United States Department of Defense, has created a set of specifications called Shareable Content Object Reference Model (SCORM) to encourage the standardization of learning management systems.

What are learning management systems used for?

LMSes are beneficial to a wide range of organizations, including higher education institutions and corporations. The primary use of a learning management system is for knowledge management (KM). KM refers to the gathering, organizing, sharing and analysis of an organization's knowledge in terms of resources, documents and people skills. However, the specific role of the LMS will vary according to the organization's training strategy and goals.

Some popular LMSes used by educational institutions include Moodle , Blackboard Learn and Schoology. Popular enterprise-level LMSes include Adobe Captivate Prime, Docebo LMS, TalentLMS, iSpring Learn and eFront.

Employee training and on boarding is one of the most common use cases for an LMS in a corporate environment. In this case, the LMS is used to help train new employees by providing opportunities to access training materials across various devices. New employees can be recognized when they add their own knowledge and feedback, which will, in turn, help employers understand how effective the training courses are and identify areas where new employees need more assistance.

LMSes can be used for extended enterprise training purposes as well. This includes customer, partner and member training. Customer training is common in software and technology companies where users need to be taught how a system works before they can use the new product. Providing ongoing customer training will also help improve customer experience and increase brand loyalty.

Another common use of LMSes in corporate environments is for employee development and retention. The LMS can be used to assign the necessary courses to current employees to ensure they are developing effective job skills, remain informed about product changes and maintain relevant knowledge through new product and compliance training.

How do learning management systems work?

A learning management system can be thought of as a large repository that allows users to store and track information in one place. Any user with a secure login and password can access the system and its online learning resources. Or, if the system is self-hosted, the user must either install the software on their hard drive or access it through their company's server.

Some common features found in a successful LMS include:

Responsive design - Users should be able to access the LMS from whatever type of device they choose, whether it's a desktop, laptop, tablet or smart phone. The LMS should automatically display the version best suited for the user's chosen device. Additionally, the LMS should also allow users to download content so it is accessible while offline.

User-friendly interface - The user interface (UI) should enable learners to easily navigate the LMS platform. The UI should also align with the abilities and goals of both the user and the organization. An unintuitive UI risks confusing or distracting users and will make the LMS ineffective.

Reports and analytics - This includes eLearning assessment tools. Instructors and administrators must be able to view and track their online training initiatives to determine if they are effective or need adjusting. This can be applied to groups of learners and individuals.

Course and catalog management - The LMS holds all the eLearning courses and the related course content. Admins and instructors should be able to create and manage these catalogs and courses in order to deliver a more targeted learning experience.

Content interoperability and integration - Content created and stored in an LMS must be packaged in accordance with interoperable standards, including SCORM and xAPI.

Support services - Different LMS vendors offer varying levels of support. Many provide online discussion boards where users can connect and help each other. Additional support services, such as a dedicated toll-free service number, are available for an extra cost.

Certification and compliance support - This feature is essential to systems used for online compliance training and certifications. Instructors and admins should be able to assess an individual's skill set and identify any gaps in their performance. This feature will also make it possible to use LMS records during an audit.

Social learning capabilities - Many LMSes have started including social media tools within their platform. This allows users to interact with their peers, collaborate and share their learning experiences.

Gamification - Some LMSes include game mechanics or built-in gamification features that allow instructors and admins to create courses with extra motivation and engagement. This can help students who need additional incentive to complete the course, possibly in the form of leader boards, points and badges.

Automation - Learning management systems should enable administrators to automate repeated and tedious tasks. Examples include user grouping, new user population, user deactivation and group enrollments.

Localization - It is important for LMSes to include multilingual support features so the learning and training content can remain unaffected by language barriers. Some LMSes integrate geolocation features that allow them to automatically present the appropriate version of the course immediately upon access.

Artificial intelligence (AI) - Finally, artificial intelligence can help an LMS create personalized learning experiences for users by providing course formats suited to their needs, and by suggesting topics the user may find interesting based on the courses they have already completed.

Types of learning management systems

The different types of LMS deployment options are:

- Cloud-based
- Self-hosted
- Desktop application
- Mobile application

Cloud-based LMSes are hosted on the cloud and often follow a software as a service (SaaS) business model. Cloud-based LMS vendors take care of maintaining the system and performing any technical updates or upgrades. Online users can access the system from anywhere, at any time, using a username and password.

Self-hosted LMSes require software to be downloaded by the user. The self-hosted platform provides greater creative control and customization, but users must maintain the system themselves and often must pay for updates.

Desktop application LMSes are installed on the user's desktop. However, the application may still be accessible on multiple devices.

Mobile application LMSes support mobile learning and are accessible wherever and whenever through mobile devices. This platform deployment type allows users to engage with and track their online learning initiatives on the go.

The various pricing models used for learning management systems include:

- Freemium - This pricing model allows users to access the basic features of some LMS platforms. Once users start engaging with the more advanced functionalities of the system, then a fee is added.

- **Subscription** - Users pay a recurring fee at regular intervals in order to access the LMS. The subscription may grant an organization total access to all LMS features, or it may require the organization to pay for each system user.
- **Licensing** - This is either an annual fee that companies must renew or an upfront fee that provides users with unlimited lifetime access.

Benefits of a learning management system

Learning management systems provide users with a variety of benefits, regardless of the type of organization using it. For example, an LMS can save an organization time and money. Instead of making learners take time out of their day to travel and sit through lessons or training, LMSes allow users to complete the coursework at a time that is best for them. Additionally, costs can be cut by eliminating the need for instructors, training days, training materials, travel expenses and location hiring.

Other benefits of learning management systems include:

- the ability to monitor user progress and performance;
- increased eLearning accessibility without geographic limitations;
- the ability to personalize the online training and learning experience;
- the ability to easily and efficiently update eLearning modules and activities;
- the ability to easily ensure online training and learning materials are being distributed effectively; and
- the use of automation that allows users to forget about tedious, repetitive tasks -- such as user enrolment and certification distribution -- and focus on more important activities.

Finally, centralized learning is another major benefit provided by LMSes. It allows an organization to safely organize and store all big data in one location. This allows instructors and admins to more easily update and maintain learning materials. It also helps produce effective training that is consistent across the organization.

Furthermore, most LMSes include advanced encryption features that help guarantee the data and content remain secure.

Examples of learning management systems

As mentioned before, employee training and onboarding are some of the most common uses for LMSes. When using an LMS for these purposes, instructors can create immersive learning experiences that allow users to develop new skills and problem-solving capabilities. For example, an LMS could be used to create tutorials that incorporate augmented reality (AR), virtual reality (VR) and even AI training. This will likely have the effect of improving creativity and innovation throughout the workforce.

Another example of an LMS use case is for sales training. This can include onboarding and training, but also extends to include the creation of seminars on product knowledge, customer interaction training and case study-based tutorials that use previous experiences with clients to improve future interactions.

An LMS can also be used to provide students with blended learning experiences. Blended learning combines traditional teaching in the classroom with online learning tools. This method is more effective than simple face-to-face education because it enriches the classroom-based experience with additional digital content that can be customized to fit a student's specific learning needs.

E-FOLIOS IN LEARNING MANAGEMENT SYSTEMS[LMS]

An electronic portfolio provides a scalable and comprehensive way to document personal progress of an organization towards defined goals and objectives, to evaluate the effectiveness of business operations, overseeing projects, as support for learning, professional development, audit public companies and to participate in assessment matters. The LMS plays a decisive role in most eLearning environments. Although they integrate many useful tools for managing eLearning activities, they must also be effectively integrated with other specialized systems typically found in an educational

environment such as Repositories of Learning Objects or e-Portfolio Systems. Both types of systems evolved separately but in recent years the trend is to combine them, allowing the LMS to benefit from using the ePortfolio assessment features.

LMS is a software application for the administration, documentation, tracking, reporting of training programs, classroom and online events, and training content . There are open source systems, such as Moodle, Sakai, .LRN or Dokeos , and commercial systems such as WebCT/Blackboard or Desire2Learn. The content delivered by an LMS can be created, obtained, gathered or evaluated in several types of systems such as Learning Objects Repositories, e Portfolio systems, Authoring Tools, Specialized Evaluators or Quizzes. An e Portfolio is the product created by the student, which contains a collection of digital objects (artifacts), combining various media (audio/video/text/images), articulating experiences, developments, achievements and learning. Its primary aim is to collect evidence for summative assessment, to demonstrate achievement, to record progress and to set targets .

The main motivation to integrate an e Portfolio system into an LMS is to use it as an assessment tool the construction of e Portfolios in the learning process contributes to: (a) improving self-understanding and understanding of the curriculum; (b) engaging and motivating students, both individually and as part of a community of practice; (c) personalizing learning; (d) supporting learning models appropriate to a digital age and (e) promoting reflective practice. These contributions are shared by students, teachers, parents and administrators. For students it shows their accomplishments and encourages them to take responsibility for their work.

For teachers it provides a framework for organizing the students' work and facilitates the students' information for assessment and decision making. For parents it offers an insight into what their children do in school. For administrators it provides evidences that teacher/school are being met. In short, the ePortfolio enables the students to construct a structured collection of their knowledge, skills and competencies , allows learners to trace the development of their thinking and learning over time and to show those competencies both to teachers and employers, providing

digital resources relevant to their own study (personalised information) and links to other learners .

OFFLINE LEARNING MANAGEMENT SYSTEM

Advances in technology have allowed for increased levels of offline access to learning management systems. While online learning retains its key advantage of being something you can do quickly and easily on the internet, it now comes with the increased flexibility of being accessible offline. That often means being able to access and complete entire courses on your phone and without the need for an internet connection.

FEATURES OF OFF LINE LEARNING SYSTEM

Learners now expect to access information at a time that's convenient to them. The ability to use LMS offline needs to be a key consideration when planning a new learning platform.

Using an LMS offline app will allow your learners to continue their learning even when they are:

- Experiencing connectivity issues.
- Travelling or commuting.
- On the go and not wanting to use mobile data.
- Out of the office or classroom and reliant on their phone.
- Working in remote locations.
- In the middle of a power cut.

As such, using an LMS offline provides greater productivity, better use of time and a more satisfying user experience. Learners can fit training around their work without having to worry about first finding a suitable internet connection.

Offline learning also means that learners' experiences of media-rich courses are not impacted by poor internet connections. Audio, video and touch functionality all work as well as they would if the user was online.

How does an offline LMS work?

Offline learning usually operates via the official app of your LMS platform. For example, Moodle offers an app that provides offline learning to users of its platform. As you would expect, an internet connection is required to download the app and relevant learning content. But the courses can then be completed offline without a connection. You only need to connect to the internet again when you want to sync or update content.

Using Moodle offline

Moodle users benefit from the offline sync capabilities of its LMS offline app Moodle App (formerly known as Moodle Mobile). The app allows learners to synchronise with the Moodle server, and access course materials, activities and content while offline. Since the app was first launched in April 2013, it has developed to keep pace with changing technologies and improving offline features. Learners using Moodle App offline can:

- Browse course content.
- Send private messages.
- Take course notes.
- Write forum posts and wiki pages.

- Complete surveys, quizzes and assignments.

Their activity will sync with Moodle when they go online again. All course content can be downloaded in one go in preparation for an extended spell of offline learning.

MOODLE AND EDMODO BASICS

Similarities between Moodle and Edmodo

- Both are created to aid e-learning. They help students and teachers to interact and collaborate outside the traditional classroom environment
- They provide access to a free account
- They are mobile responsive
- They can be deployed or hosted on the cloud

Moving ahead.

Moodle vs. Edmodo – Key Points of Difference

Content Creation

Moodle allows teachers to author content on their own. It comes equipped with a text editor as well. Teachers can build their own syllabus and curriculum using a variety of plugins.

Edmodo does not allow content authoring. It has a built-in content library to create lesson plans. You can upload content from across the internet, on Edmodo..

Storage Space and Number of Users

The free plan of Moodle offers 200 MB of storage space. Moodle's free school plan can allow up to 50 users. You could explore their paid packages if you are looking for something more scalable.

Edmodo is pretty scalable. It offers access to unlimited users with unlimited storage space..

Target Audience

Moodle is a platform with enormous functionality. It caters to a wide range of audiences. K-12, higher education universities and huge enterprises – Moodle can handle all of it pretty well.

Edmodo is more like a social learning platform. Learning is fun with an attractive and intuitive interface of Edmodo. So, it seems to target the lower grades from kindergarten to 12th.

Use Moodle if you are a higher education institute or a large business as Moodle is more professional. Edmodo should be able to help teacher in middle and high school. Edmodo could be a better option for teachers who want to make learning a fun exercise for their students.

Training and Support

Moodle as a whole is complex. It may be a little difficult for beginners. So, it offers the assistance of Moodle certified experts to help you get started. These experts provide you with all the technical support and other services if need be.

There are MoodleMoots organized across the globe – a conference to share the best practices and your discoveries. Apart from this, Moodle offers community support just like Edmodo.

SCORM Compliance

SCORM basically allows for different LMS to work together.

Moodle is SCORM compliant (It does not mean that it generates SCORM content). Moodle presents the content in SCORM packages to learners and saves

data from learner interactions with the SCORM package. So, it essentially is a medium.

Moodle is able to support content or activities published by most software. If you wish to export your Moodle courses to other LMS, SCORM makes it easier. It is more versatile than Edmodo in this case.

Edmodo is not SCORM compliant. For instance, an e-learning activity published by Adobe Captivate won't be supported in Edmodo.

Interface

Gradually develop an understanding of how Moodle works, with regular use

PODCASTS

A podcast is an episodic series of digital audio files that a user can download to a personal device for easy listening. Streaming applications and podcasting services provide a convenient and integrated way to manage a personal consumption queue across many podcast sources and playback devices.

A podcast series usually features one or more recurring hosts engaged in a discussion about a particular topic or current event. Discussion and content within a podcast can range from carefully scripted to completely improvised. Podcasts combine elaborate and artistic sound production with thematic concerns ranging from scientific research to slice-of-life journalism. Many podcast series provide an associated website with links and show notes, guest biographies, transcripts, additional resources, commentary, and even a community forum dedicated to discussing the show's content.

The cost to the consumer is low, with many podcasts free to download. Some are underwritten by corporations or sponsored, with the inclusion of commercial advertisements. In other cases, a podcast could be a business venture supported by some combination of a paid subscription model, advertising or product

delivered after sale. Because podcast content is often free, podcasting is often classified as a disruptive medium, adverse to the maintenance of traditional revenue models.

WIKIS

Wikis are ideal for group projects that emphasize collaboration and editing. Some common uses include:

- Mini research projects in which the wiki serves as documentation of student work
- Collaborative annotated bibliographies where students add summaries and critiques about course-related readings
- Compiling a manual or glossary of useful terms or concepts related to the course, or even a guide to a major course concept
- Maintaining a collection of links where the instructor and students can post, comment, group or classify links relevant to the course
- Building an online repository of course documents where instructors and students can post relevant documents
- Creating e-portfolios of student work.

Importance of wiki

- One of the primary reasons to use wikis is because they help students reach Bloom's higher order skills – things like creating and evaluating. Additionally, wikis achieve many of good teaching practices including cooperation between students, active learning, prompt feedback from peers, time on task, the articulation of high expectations, and support for diverse talents.
- Practically, we also think that wikis are a good tool to use because access and editing can be controlled by the instructor thus making a wiki public or private.

Comparing wikis and blog

- Wikis are often compared to blogs because, in many ways, they're similar: they're easy to edit, are used to collaborate, and each is easy to set up.
- The difference between a wiki and a blog is that wikis are designed for collaboration among groups of users. Anyone with the shared wiki password can edit the content on a wiki at any time. Wikis also provide discussion boards for every page, enabling users to engage in ongoing conversations about their developing project .

Reflective Blog

The blog is used in this class as a modern replacement to the more traditional journal. It is an instrument for practicing writing and thinking. Unlike your typical class notes in which you “passively” record data/information given to you by an instructor your blog should reflect upon lessons you have learned-- a personal record of your educational experience in the class.

Maintaining a blog serves several purposes:

- A means of communication, conversation (e.g., between material and yourself, yourself and instructors).
- Provides regular feedback between you and instructors and helps to match expectations.
- Platform for synthesis of new knowledge and ideas.
- Helps to develop critical thinking.
- Helps to elicit topics of interest, challenging topics that need improvement, etc.
- Help to clarify troublesome concepts.
- The purpose of the blog is to self-reflect about own learning.

UNIT – V

INTERACTIVE WHITEBOARD BASED LEARNING

Computer, Projector and Whiteboard – How to use it – Interactive Whiteboard for Higher Education- As an Instructional tool- features available when using an Interactive Whiteboard Interactive teaching- Group Interaction.

Introduction

An interactive whiteboard is a large, touch sensitive board which is connected to a digital projector and a computer. The projector displays the image from the computer screen on the board. The computer can then be controlled by touching the board, either directly or with a special pen.

Computer, Projector and Whiteboard

A computer is a device that accepts information (in the form of digitalized data) and manipulates it for some result based on a program or sequence of instructions on how the data is to be processed. Complex computers also used for storing data for some extension. A program may be invariable and built into the computer or different programs may be provided to the computer. Today's computers perform both kinds of programming. The characteristics of computers that have been made powerful and universally useful that are speed, accuracy, diligence, versatility and storage capacity. A powerful computer is capable of performing about 3-4 million simple instructions per second. Computers are used in so many fields in our daily life. Engineers, Doctors, Students, Teachers, private and Government Organization use computers to perform specific tasks. Computers make the learning process much effective. It Increases motivation and accelerates learning.

A projector or image projector is an optical device that projects an image on a surface, commonly a projection screen. Most projectors create an image by passing a light through a small transparent lens, but some newer types of projectors can project the image directly by laser transmitters. The most common type of projector used today is called a video projector. Video projectors are digital replacements for former types of projectors such as slide projectors and overhead projectors. These former

types of projectors were mostly replaced with digital video projectors throughout the 1990s and early 2000s (decade), but old analog projects are still used at some places. The latest types of projects are handled projectors that use lasers or LEDs to project images.

A whiteboard is a non-electronic variation of the traditional “rewriteable” school room blackboard, but is white instead of black and of a material that can be written on with colored markers (known as dry erasable markers). Dry erasable markers are easy to erase than the chalk used on a blackboard.

How to use it

Presentations and projects

Students can present multimedia projects with the help of whiteboard and control the entire presentation without touching a computer keyboard.

Web Streaming and Video

Teachers can show streamed or download video clips using programs like Windows media Player and Quick Time. Clips embedded into multimedia presentation programs can easily be shown as well. The interactive features of the white board allow users to pause, circle, annotate, highlight, etc. DVD or Video Home School (VHS) player can be connected to the projector too.

Printing and Savings Notes

Let users print or save anything what with the help of Interactive white the help of Interactive whiteboards they have written. Teachers can put notes in a file on a shared server for students to download or post notes on a web page or blog. Notes can also be printed and distributed. We can allow students to participate in the presentation instead of simply copying from the board.

Encouraging Critical Thinking

Interactive whiteboards encourage critical thinking. Use whiteboard with concept mapping software like inspiration or Kidspiration. If the teachers switch to outline view Students' ideas could be written directly on the whiteboard. Though begin the class can brainstormed together in an organized fashion.

Interactive whiteboard for higher education

An interactive whiteboard combines a dry erasable whiteboard with a Liquid Crystal Display (LCD) projector and is usually mounted on a wall or floor stand. Powered by easy-to-use software, the whiteboard becomes a computer screen viewable by an entire classroom. The projector projects the content from a computer onto the surface of the board while the teacher controls the content either with a printer or a touch of the hand instead of a keyboard and mouse. The combination of software with the projector results in much more than simply a projected image.

Anything that can be done on a computer monitor can be replicated on the interactive white board. A teacher can create engaging lessons that focus on one task such as a matching activity where students use either their fingers or a pen to match items. Another teacher might integrate multiple items into a lesson plan such as websites, photos and music that students can interact with, respond to verbally or even write comments on the board itself. Image size and placement can change with a simple touch to the screen. This technology makes one computer classroom a workable instructional model.

Classroom application for using interactive whiteboards include

- ❑ Multimedia lessons and presentations audio and video.
- ❑ Collaborative problem solving.
- ❑ Showcasing student projects and presentations.

- Virtual field trips.
- Recorded lessons that can be used by substitute teachers.
- Documentation of student achievement.

Students learn better when they are fully engaged and that multisensory, hands-on learning is the best way to engage them. Interactive whiteboards facilitate multisensory.

Interactive whiteboards as an instructional tool

An interactive whiteboard is an instructional tool that allows computer images to be displayed onto a board using a digital projector. The instructor manipulates the elements on the board by using his finger as a mouse, directly on the screen. Items can be dragged, clicked and copied and the lecturer can handwrite notes by hands.

This type of tool promotes creative teaching and motivates students into absorbing information. Teaching with an interactive whiteboard allows lecturers to accommodate all different learning styles.

- Tactile learners get to touch and move things around the board. They can also make notes and highlight elements.
- Visual learners are benefited from a clear view of what is happening on the board.
- Audio learners can participate in a class discussion.
- Features available when using an interactive whiteboard
- Any application that runs on computer can be used on an interactive whiteboard.
- Add annotation
- Highlight text.
- Add notes and drawings and then save them to be printed out and shared, or added to a virtual learning environment.

- Show pictures and educational videos to the whole lecture theatre. Students can label parts or highlight elements of an image.
- Demonstrate the content available on a website in a teacher directed activity.

Some of the features useful for teaching at university level using an interactive whiteboard.

Screen shade – The screen shade lets cover the screen, allowing to gradually revealing information to our audience.

Interactive teaching

Interactive teaching is a two way process where in the lecturer modifies his or her approach in response to the needs of the learner .The interactive lecture is keenly aware of the learners and their different learning styles .A good lectures are interactive lectures .It is not possible to teach without interaction .Interactive learning is also a two way process.

The first thing to realise about interactive teaching is that it is not something new or mysterious .Over the last twenty years, the field of cognitive science has taught us about about how people learn. For example even the most lucid and brilliant exposition of a subject by a teacher in a lecture, may result in limited learning if the students brains do not do the necessary work to process it, there are several possible causes why students learning may fall short of expectations in such a situation. They may,

- Not understand a crucial concept partway into the lecture and so what follows is unintelligible.
- Be missing prior information or not have a good understanding of what went before, so the conceptual structures on which the lecture is based are absent.
- Lack of interest, motivation, or desire to expend the mental effort to follow the presentation, understand the arguments, make sense of the positions, and validate the inferences.

Whatever the cause, without interacting with the students, a teacher has no way to know if his/her efforts to explain the topic were successful. This brings to the first of three distinct reasons for interactive teaching. It is an attempt to see what actually exists in the brains of our students. This is the “summative” aspect. It is the easiest aspect to understand and it is well described in the literature. But it is far from being the only perspective. The second reason is “formative”, where the teacher aims through the assigned task to direct students’ mental processing along an appropriate path in “concept-space”. The intent is that, as students think through the issues necessary in traversing the path, the resulting mental construction that is developed in the students head will possess those properties that the teacher is trying to teach. As Socrates discovered, a good question can accomplish this result better than, just telling the answer.

The third may be termed “motivational”. Learning is hard work, and an injection of motivation at the right moment can make all the difference. One motivating factor provided by the interactive teacher is the requirement of a response to a live classroom task. This serves to joint the student into action, to get his brain off the couch, so to speak. Additional more subtle and pleasant events follow immediately capitalizing on the momentum crated by this initial burst. One of these is a result of our human social tendencies. When teachers ask students to work together in small groups to solve a problem, a discussion ensues that not only serves in itself to build more robust knowledge structures, but also to motivate. The anticipation of immediate feedback in the form of reaction from their peers, or from the teacher is a very stong motivator. If it is not embarrassing or threatening, students want to know desperately whether their understanding is progressing or just drifting aimlessly in concept space. Knowing that they are not allowed to drift too far off track provides tremendous energy to continue.

Group interaction

“A group is two or more persons who are interacting with one another in such a manner that each person influences and is influenced by each other person”

- Shaw (1971)

For a collection of people to be defined as a group, the members must

- Interact with one another
- Be socially attracted to each other
- Share goals or objectives
- Have a shared identity which distinguishes them from other groups.

Interactive whiteboards promote group discussion and participation. They are an effective tool for brainstorming as notes made on the screen can be turned into text and saved to be shared and distributed later. They are an ideal tool for small group work and collaborative learning, as students can huddle around the board developing ideas, and then save the work for sharing over a network or by email. Group interaction refers to the dynamics of the team and the way individuals in the group interact with one another.

Conflicts may occur between certain individuals and may have the potential to cause a distraction to the tasks undertaken. Practitioners should be aware of potential implications resulting from conflicts. Practitioners should be encouraged to communicate any issues arising to enable issues to be resolved. Management and practitioners should be aware of potential issues arising from peer pressure, to avoid compromising operational safety. Early identification and communication of staff conflicts may prevent issues developing. This may enable potential safety significant implications to be avoided. Group Interaction is a more formal version of conversation. In conversation, the person with the new learning does most of the talking, presenting to one or more other people, who can ask questions. In group interaction, the questions and interactions are nearly scripted, to make sure that certain questions and certain thought pathways are included.

Method

Whether the group is just a dyad (two people) or a small group of four or five, it's a good idea to include these features:

Clarification: The presenter needs to be able to communicate his or her knowledge in a clear and understandable way, and support the knowledge claims with appropriate evidence, arguments, and reasons. In the course of the presentation, then, at various intervals, the listener(s) should

- Paraphrase the presenter's important points
- Explain the structure of the presenter's argument: thesis (central idea) and reasons
- Generate a list of confirming and disconfirming arguments applicable to the presenter's thesis
- List or draw the sequence of steps in the process, the points made, or reasons supporting the argument
- Outline the presentation and discuss the outline with the presenter to see how well the outline captures the presenter's intention.
- Exploring in the box: The listeners of the presentation should ask the following questions in an interview-style interaction when the presenter finished:
 - Why is this important? That is, now that you and we know this, so what?
 - Please explain this aspect more fully or clarify this idea
 - What would be another example?

Exploring out of the box: these questions take the presenter and the audience beyond the immediate information just learned into the context around it. It's important to be able to fit new knowledge into current knowledge. This is a process known as

What would be an example of disconfirming evidence? (Evidence that would argue the presenter's information or central idea.) Personal response: Learning that

impacts us personally is much more likely to be remembered than something one just memorized off hand and only for a test. here are some personalization questions.

- What surprised you the most about learning this?
- What one thing (or two or three things) that you learned impacted you the most on a personal level?
- What you still curious about?
- Will you be doing additional research in this area? Why? Why not? What?

High performance learning

When the information is complex or has more than one position, two presenters can deliver aspects of the same idea or arguments for opposing positions. In the latter case, the format is a debate. The audience (the other members of the small group or class) can then question each presenter in turn using some of the structured questions above.

Pros

- It motivates and encourages students to engage
- Cater variety of learning styles
- Scaffold learning
- Provide effective feedback
- Promote active participation
- Effective tool for effective teacher
- Immediate access to internet, video, sounds, interactive, website, etc.
- Students get to learn new nechnology
- Research reveals that some students learn better

- Immediate formative assessment with voters
- Once the flip charts are made they can be used in future
- Most of the students enjoy it

Cons

- Overloading of information (faster paced highly visual lessons)
- Substitution mentality –still ‘chalk and talk’
- Students are as spectators
- Template thinking (use of possible resources)
- Expensive (cost of usage)
- The board will only work as well as the teacher using it
- Time consuming
- It depends on electric power supply.

Conclusion

Thus, the combination of computer, projector and whiteboard forms the interactive whiteboard. The interactive whiteboards become popular over the last few years and it appears that their use will continue to grow exponentially. We cannot deny it in modern world.

