Department of Open & Distance Learning

Punjabi University, Patiala

Class : M.A. II (Education) **Semester : 4**
Paper : I (ICT in Education) **Unit : I**
Medium : English

Lesson No.

1.1 : Information and Communication Technology

1.2 : ICT as an aid to teaching and learning : Strengths and weaknesses of ICT in Classroom

1.3 : Instructional Design : Different Strategies

1.4 : Instructional and Design : Methods Developing teacher competencies for ICT

Department website : www.pbidde.org

M.A (Education) Part-II **Paper-I**

(ICT in Education)

Lesson No.1.1 **Author: Dr. Sharmila**

Information and Communication Technology: Meaning, Concepts, Needs,

Aims Structure of the Lesson:

1.1.1 Objectives:

After going through this lesson learners will be able to:

i) Know the meaning of ICT (Information and communication technology)
ii) Define ICT(Information and communication technology)
iii) Describe the need of ICT (Information and communication technology)
iv) Explain the aims of ICT (Information and communication technology)

1.1.2 Meaning of ICT

ICT- What it means?

You see the letters ICT everywhere- particularly in education. Let us discuss a brief introduction to this important and fast -changing subjects.

ICT stands for Information and communication technology

Meaning: Information and communication technology means to all technology used to handle telecommunication, audio-visual gadgets, broadcast media, and network based control and monitoring functions and building management system.

Information and communication technology discusses technologies that provide access to information through telecommunications. It also consists of internet, wireless networks and other communication mediums.

Definitions:

According to Anderson and Glen (2003): ICT is the term generally applied collectively…to those technologies that are being used for accessing, gathering, manipulating and presenting or communicating information. The technologies may include hardware and other devices: software application and connectivity.

ICT stand for information and communication technologies and is defined, as a diverse set of technological tools and resources used to communicate, and to create, disseminate, store and manage information. These technologies include computers, the internet, broadcasting technologies (radio and television) and telephony. (UNDP, 2000) According to UNESCO, Information and communication technologies (ICT) refers to forms of technologies that are used to create, store, share or transmit, exchange information. This broad definition of ICT includes such technologies as: radio, television, video, DVD, telephone, satellite system, computer and network hardware and software; as well as the equipment and services associated with these technologies such as video conferencing and electronic mail.(UNESCO 2012)

Information and communication technology (ICT) is a new development which brings together the technology & microelectronics. So It may be taken as a diverse set of technological resources needed to communicate, create, disseminate, store and manage information.

"ICT implies the technology which consists of electronic devices and associated human interactive material that enable the user to employ them for a wide range of teaching-learning processes in addition to personal use."

All these definitions combine information technology and communication technology and from these definitions we conclude that Information and communication technology is that type of technology employed in the shape of tools, equipment and application support which helps in the collection, storage, retrieval, use, transmission, manipulation and dissemination of information as accurately and efficiently as possible for the purpose of enriching the knowledge and develop communication, decision making as well as problem solving ability of the user.

1.1.3 Concepts of ICT (Information and Communication Technology)

Information and communication technology is a term that refers to all the hardware and software that people use to send and receive information. Social networking sites such as Facebook, Twitter, and My space, computers, phones and tablets make up the term ICT. Over the past few years, the ICT sector has grown substantially releasing new gadgets to improve how we communicate.

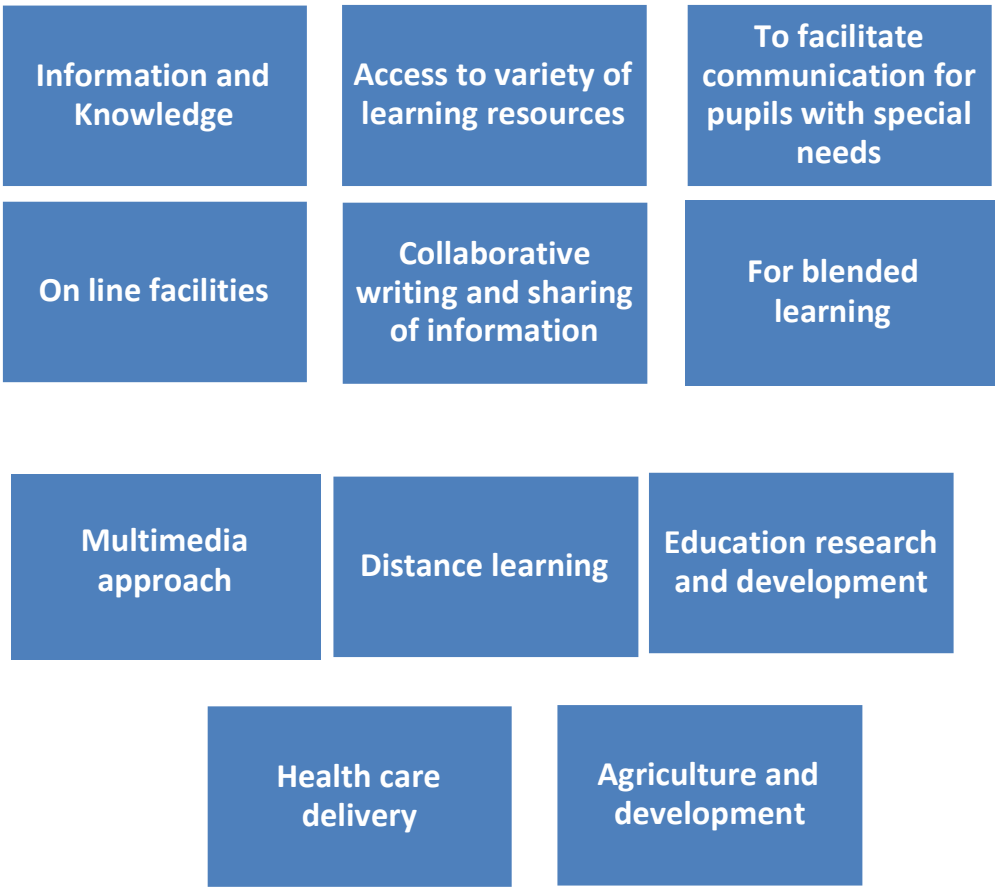
ICT can be classified as traditional and modern technology.

Traditional information and communication technology include printed media (like text books, journals and other literature), model, verbal information, pictures, charts, maps, diagram, audio aids (like radio), audio visual (like television) and overhead projectors.

Modern information and communication technology are combination of hardware, software and media. They include multimedia projectors, digital libraries, networks (LAN, MAN and WAN), e-mail, internet, video and audio conferencing, virtual classroom and multimedia personal computers.

1.1.4 Need of ICT (Information and Communication Technology)

Research in advanced countries shows that ICT related technologies have the following needs in different fields:



1. **Information and Knowledge**: Now in the era of globalization the pace of imparting knowledge is very fast and one can be educated anywhere at any time. Information can be accessed in seconds by connecting to the internet and surfing through web pages.

2. **Access to variety of learning resources:** In the year of computers and web networks, IT aids plenty of resources to enhance the teaching skills and learning ability. Now with this vivid and vast technique as part of the IT curriculum, learners are encouraged to regard computer as tools to be used in all aspects of their studies.

3. **To facilitate communication for pupils with special needs:** Information technology has brought drastic changes in the life of special needs. IT provides various software and technique to educate these special children.

4. **On line facilities:** As part of the IT curriculum, learners are encouraged to regard computers as tools to be used in all fields of their studies. In particular, they need to make use of the new technology to communicate ideas, describe projects, and order information in their work. These require them to select the medium best suited to conveying their message.

5. Collaborative writing and sharing of information: To use the online resources like email, chat, discussion forum to support collaborative writing and sharing of information. With online we can be unite together to do the desired task. The internet and its web sites are now familiar to many children in developed countries and among educational institutions**.**

6. **For blended learning:** Combining conventional classroom learning and E-learning systems for the blended learning.

7. **Multimedia approach:** Multimedia means use of devices and materials that involve sight, sound, or both. Among the devices used are still and motion pictures, filmstrips, television, computers and transparencies. The growth of audio-visual education has reflected developments in both technology and learning theory.

8. **Distance learning:** Distance learning, method of learning at a distance rather than in a classroom. The convergence of increased demand for access to educational facilities and innovative communication technology has been increase.

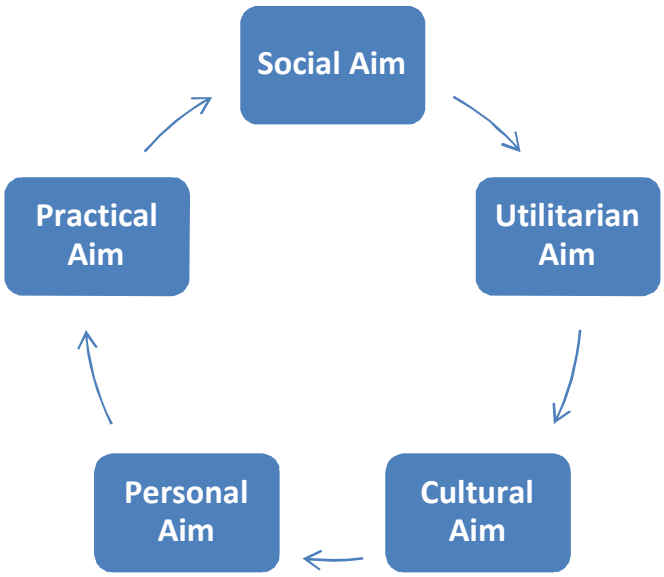
9. **Education research and development:** There is a great need of ICT in education and develop the nation's research and development capacity to support, facilitate and contribute to the development key sectors of the national economy.

10. **Health care delivery**: There is a great need to improve access to quality health care as close to the family as possible through the development and exploitation of internet and other modern technologies since the existing of communication between health centers and administrative centers are poor.

11. **Agriculture and development:** There is a need of ICT in the agriculture sector through the use of internet in the planning, implementation, monitoring and the information delivery process.

1.1.5 Aims of ICT (Information and Communication Technology)

The following are the aims of ICT (Information and communication technology) by Loise Kinyanjui



1. Social Aim: It aims to equip learners with the appropriate social skills required to cooperate with fellow ICT learners for a more productive learning experience. It empowers students who are unable to use this technology outside the school premises by ensuring sufficient access to those students. Through this, it will also ensure equity among all learners, as they will all have the same opportunity to use the ICT Facilities in school. Another social aim of ICT is to facilitate good communication between the students thus promoting better social understanding.

2. Utilitarian Aim: One of the aims of ICT is to help students to become competent and confident users who can use the basic knowledge and skills acquired to assist them in their daily lives. It is also supposed to prepare students for the world of tomorrow. It aims to help to have an open and flexible mind. This will help them to adjust to the inevitable future changes.

3. **Cultural Aim:** ICT aims to assist students to appreciate the beauty and diversity of culture. It also aims to help students become well cultured citizens of the modern world. It achieves this as it facilitates the discovery and appreciation of various cultural heritages of different countries around the world.

4. **Personal Aim:** ICT aims to assist students to grow personally by facilitating different methods of learning. Distance learning programs are now provided by most colleges and universities. Many people are using these programs to get degrees that they would not have been to receive without ICT. It also aims to allow the public to easily access the necessary over the internet.

5. **Practical Aim:** ICT aim to development of learning skills, expansion of optional education and open source of education. It also aims to promote technology literacy of all citizens, especially for students.

1.1.6 Summary

In this lesson we have discussed the meaning, concept, needs and aims of Information and communication technology (ICT). Information and communication technology (ICT) defined as a "diverse set of technological tools and resources used to communicate and to create, disseminate, store and manage information." From the study of this lesson it can be concluded that ICT permeates the business environment, it underpins the success of Modern Corporation and it provides government with an efficient infrastructure. At the same time, ICT adds value to the processes of learning and in the organization and management of learning institution.

1.1.7 Suggested Questions

Q1. What do you mean by the term Information and communication technology? Explain its concept clearly.

Q2. What is Information and communication technology or ICT? Discuss its need in detail.

Q3. What are the aims of Information and communication technology? Discuss in detail.

1.1.8 Suggested Readings and Web resources

Abbott, C. (2001). ICT: Changing Education. UK: Psychology press

Mambi, Adam J. (201). *ICT Law Book: A Source Book for Information and Communication Technologies*. Tanzania: Mkuki na Nyota PublishersLtd.

Sharma, Hemant (2014). Innovative inputs in ICT: Amit Prakashan, Jalandhar.

Mangal, S.K., & Mangal, Uma (201). *Information, communication and Educational Technology.* Tandon publications, Ludhiana

Web resources

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M.A (Education)Part-II **Paper-I**

(ICT in Education)

Lesson No. 1.2 **Author: Dr. Sharmila**

ICT as an aid to teaching and learning: strengths and weaknesses of ICT in classroom

Structure of the Lesson :

1.2.1 Objectives:

After going through this lesson learners will be able to:

i) Know ICT (Information and communication technology) as an aid to teaching and learning

ii) Describe the strengths of ICT (Information and communication technology)

iii) Explain the weakness of ICT(Information and communication technology)

1.2.2 ICT as an aid to teaching and learning

Information not only in textual form but in audio, video or any other media is also to be transmitted to the users. Thus, the ICT = IT +multimedia.

"ICT in education is the key to unlocking the skills and knowledge of our future generations of young people. It is the tool for learning for 21st century" Kate McKenzie

ICT is considered a key pillar to establishing knowledge society since it is the main tool to spread out knowledge plus its role in developing, supporting, facilitating, and accelerating scientific and cultural research as wide as possible (Arab Knowledge Report, 2009). In teaching, ICT tools can be employed in order to improve learner's ability of understanding.

ICTs can work as an effective tool in enhancing teaching and learning. ICTs can transform the traditional authoritative learning into more transparent learning, with the teacher becoming a facilitator rather than the expert. Information technology will transform learning from traditional schooling to lifelong learning (Anantha, 202). With ICTs, the role of the teacher has changed from knowledge transmitter to that of learning facilitator, guide, navigator and co-learner with the students. On the other hand, learners will take greater responsibilities for their own learning in the fantasy interactive learning environment that evokes mental images of physical and social situation not actually present or in some cases not possible (Wang & reeves, 2007)

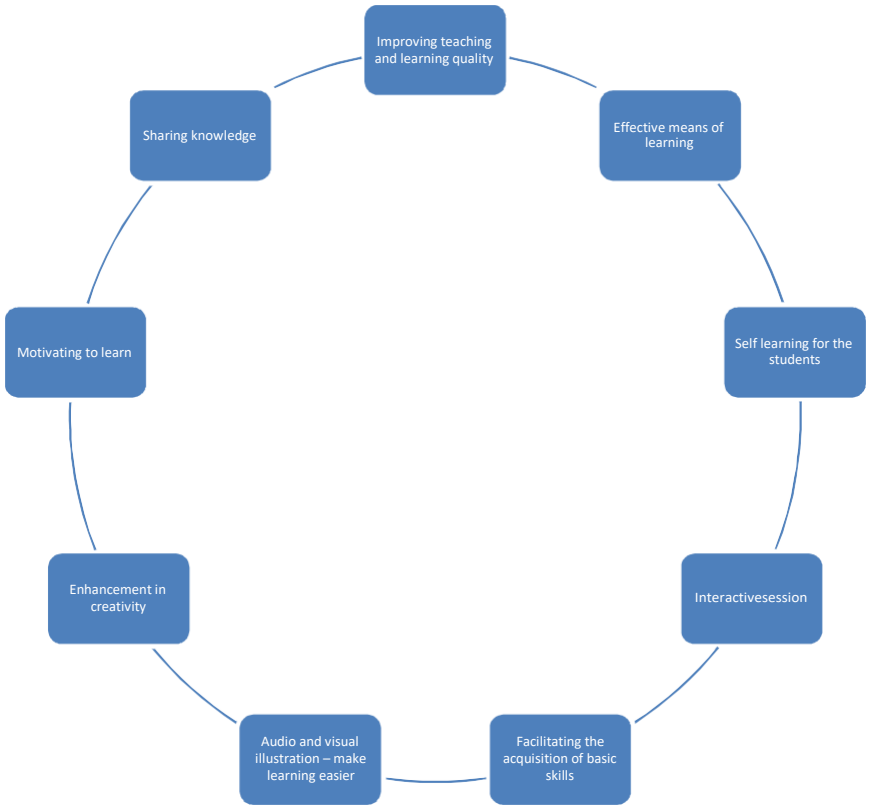
ICT provides online interaction facility. Students and teachers can exchange their ideas and views, and get clarification on any topic from different experts and practitioners etc. the learners can get opportunity to work on any live projects with learners and experts from other countries. The super highway and cyber space also help in qualitative improvement of Teaching- Learning Process. It may also be used in diagnostic teaching as well as in remedial teaching online or offline. The ICT can be made use in the evaluation. The student can instantaneously get the feedback about the status of his understanding and if the answer is wrong, he/she even can get the correct answer (Sansanwal, 2009).

1.2.3 Strengths of ICT in classroom

According to Ms. Odette, "If a teacher wants to communicate with students, it is essential to have a means of communication. For this, the computer is a good way to convey a message. We must, first of all, make known to students to become experts in this field. We must guide them in their learning.

The integration of ICT in classes allows for a "quick and economic to the most diverse knowledge on a wide range of topics and subjects" (El Jarrad, 1996)

Following are the some strength of ICT in teaching learning process:



1.2.3.1 Effective means of learning:

The technology allows students to have access more comprehensive sources of information. They learn basic skills related to information retrieval.

Technology in classroom is designed for making the learning easy and quicker. Its efficiency allows the students to grasp the concepts in the shorter span of time.

1.2.3.2 Self learning for the students:

With the assistance of ICT students are able to get exposed through large amount of information and opportunities for collaborating with others in accomplishing complex tasks and effectively communicating knowledge to others. It helps in the process of transitioning from teacher centred instruction to student centred instruction.

1.2.3.3 Audio and visual illustration – make learning easier:

In case if the classroom is equipped with technology and every individual has his own system with them, the lesson could be showcased in the audio-visual format. It allows you to experiment more in the pedagogy.

1.2.3.4 Facilitating the acquisition of basic skills:

The transmission of basic skills and concepts that are the foundation of higher order thinking skills and creativity can be facilitated by ICTs through drill and practice. Most of the early uses of computers were for computer based learning that focused on mastery of skills and content through repletion and reinforcement.

1.2.3.5 Motivating to learn:

ICTs such as videos, television and multimedia computer software that combine text, sound, and colourful, moving images can be used to provide challenging and reliable content that engages the students in the learning process. Interactive radio likewise makes use of sound effects, songs, dramatization and other performance conventions to compel the students to listen and become involved in the lesson being delivered.

1.2.3.6 Sharing knowledge:

Students can use ICT to present their work in a highly professional format. They can create documents and slideshow to demonstrate what they have learned, and then share with other students and with their teachers.

1.2.3.7 Enhancement in creativity:

All the students don't believe in going through the text books, due to which they are not efficient or quick learners. There are few students who do require the creativity for inspiring their potential learning. The best thing about the technology in classroom is that it is able to help those students who are interested in learning things in creative and innovative manner.

1.2.3.8 Improving teaching and learning quality:

With the help of ICT, teachers can develop various abilities like accessing new resources, acquiring skills for self-organization and time management, preparing themselves for self – training of various elements in relation to teaching learning, enabling them to solve problems in their use of ICT and accessing

available support and transform themselves into self- evaluators. All these things will end up in developing their capabilities as effective teachers (Jindal 202).

1.2.3.9 Interactive session:

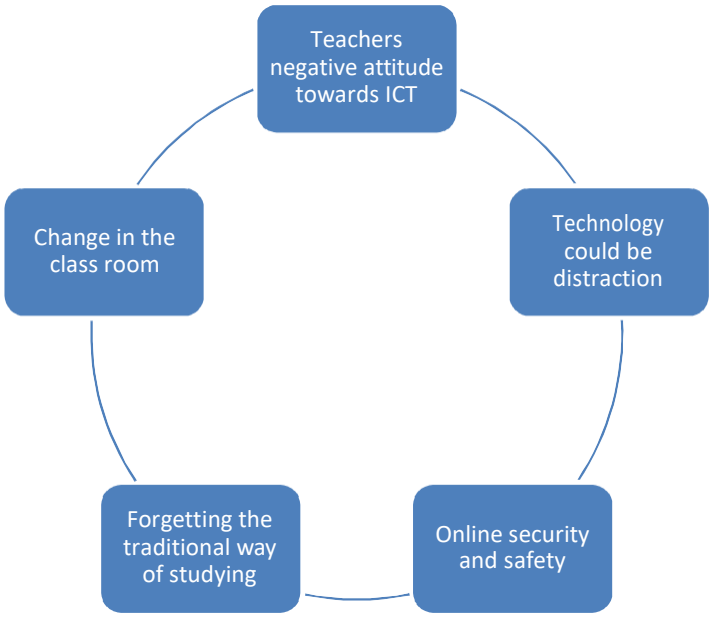
ICT gives interactive session during teaching learning process where students can discuss their view points with experts.

In this way use of ICT has a bright vision and a number of uses for guiding the path of education of the growing children. ICT can be used in educational institutions either as an application or as a subject or it is integrated in the total education system subject to the realization of goals, resources available and situation demands.

1.2.4 Weaknesses of ICT in classroom

According to Hara (2004), within the early education attitudes towards ICT can vary considerably. Some see it as a potential tool to aid learning where as other seem to disagree with the use of technology in early year settings. Blatchford and white bread (2003) suggests that the use of ICT in the foundation stage is unhealthy and hinders learning. Other early years educators who are opposed to offering ICT experiences within the educational settings take a less extreme view than this and suggest that ICT is fine, but there are other more vital experience that young children will benefit from.

Following are the some weaknesses of ICT in classroom:



1.2.4.1 Teachers negative attitude towards ICT:

Some people may have the opinion that the teacher who had not experienced ICT throughout their learning tend to have a negative attitude towards it, as they may lack the training in that area of the curriculum. Teachers do not want to have transition or switch over to new methodology.

1.2.4.2 Technology could be a distraction:

Technology could be a distraction, in the classroom majority of the students are using ICT for the personal reasons. The only means how it could be achieved is by setting down with the specific set of rules and regulation for classroom. Failure to fulfil with the terms, students would be at great risk of learning and losing his system.

1.2.4.3 Online security and safety:

One of the major concerns is with regards to security and safety of students as they should not be able to access the unsuitable materials. It is due to the security that most of the search engines are providing facilities of filter for removing unwanted content on the site.

1.2.4.4 Forgetting the traditional way of studying:

The students are no longer going to depend on books which are shared by their seniors for them to study. They are inclined to enhance their knowledge the use of the technology. Even the simple problems and homework assigned to them are solved with the help of technology and do not use their mind at all.

1.2.4.5 Change in the classroom:

Such kind of mixture of technology goes much beyond that of computers. Technological devices and internet has changed the means of learning which are taking place. Traditional methods of education are no longer the norm and now technology is origin for almost all the lessons taught or methods of education.

In this way the task of integration of ICT in classroom is facing a lot of weaknesses. However there is a great need to bring needed positive changes in this scenario.

1.2.5 Summary

There are many strengths of ICT in classroom. Of course one must own and know the use that we do in the classroom since have sophisticated tools. It is essential to make good use in our classes, because the technologies are the next generation.

Moreover the use of ICT had many impact on students. They improve the motivation and the source of learning from some things they know well.

1.2.6 Suggested Questions

Q1. What do you mean by the term Information and communication technology?

Q2 Explain ICT as an aid to teaching andlearning.

Q3. What is Information and communication technology or ICT? Discuss its strength in detail.

Q4. What are the weaknesses of Information and communication technology? Discuss in detail.

1.2.7 Suggested Readings and Web resources

Abbott, C. (2001). ICT: Changing Education. UK: Psychology press

Mambi, Adam J. (2010). *ICT Law Book: A Source Book for Information and Communication Technologies*. Tanzania: Mkukina Nyota Publishers Ltd.

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Web resources

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www.wikieducator.org

www.edtechreview

www.ictineducation org

www.cenarestgabon

Lesson No. 1.3 **Author: Dr. Jagpreet Kaur**

Instructional Design: Different Strategies and Methods

Structure of the Lesson

1.3.1 OBJECTIVES

After reading this lesson, the students will be able to

1. Understand the concept of instructional designs.
2. Understand and differentiate between different strategies of instructional designs.
3. Comprehend different types of methods of instructional designs.
4. Differentiate between strategies and methods.

1.3.2 INSTRUCTIONAL DESIGN: DIFEERENT STRATEGIES

Teaching is very broad process and activity which includes various aspects and components. Technological foundation of education has emphasized two main aspects

Instructional procedure of teaching learning and *'Instructional designs'* of education system.

The concept of Instructional procedure is given by Rober-Glaser as third component of *Basic model of Teaching*. Instructional procedure includes maxim techniques methods and skills of teaching. Instructional procedure is same as teaching procedure which also includes feedback devices and reinforcement system. It is mainly concerned with classroom teaching designs.

Teaching broadly consists of *instructional designs.* The development of educational engineering has provided the scientific basis of instructional system. Educational technology had the main assumption that teaching is not only an art but also a science: teachers are only effective by birth but they can be made effective through training institution.

Glaser (1968) states that professional skills and efficiency can be developed with the help of instructional designs. The experts and specialists are attempting to investigate the level of professional skill to be developed. L. Carter (1966) found in his investigation that instructional designs were effective for developing group professional efficiency than an individual. Glaser has enumerated the following functions of instructional designs:

1. It emphasizes on structure of the task. The content is analyzed for its structure and ascertaining its characteristics.
2. The learner's responses are analyzed in view of objectives and levels of learning. The entering behaviours is considered for providing new stimuli to have desired responses of the learner.
3. The appropriate teaching strategies, techniques and tactics are selected for presenting content so that desired learning structure may be generated. The techniques of motivation are employed for leading the teaching.
4. The measuring instrument is constructed for evaluating the performance level of the students and decision may be taken about the objectives of learning.

The desired objectives could not be achieved on the basis of learning theories. Therefore, teaching learning structure, teaching theories and structure of the content have been developed. Instructional designs are the sum of these things.

1.3.2.1 Definitions of Instructional Designs

Unwin (1968) have given a comprehensive definition of instructional design: "Instructional design is concerned with an application of teaching skills and techniques for the requirements of education and training. This includes facilitation of learning by manipulation of media, methods and the control of environment so far as this reflects on learning".

"Instructional design is systematic integration from general learning principles into learning material. It is the art and science of creating an instructional environment and materials that will bring the learner from the state of not being able to accomplish certain tasks to the state of being able to accomplish those tasks. Instructional Design is based on

theoretical and practical research in the areas of cognition, educational psychology, and problem solving" Siemens (2002).

Instructional design is defined as "a systematic process that is employed to develop education and training programs in a consistent and reliable fashion" (Reiser and Dempsey, 2007).

In addition, it may be thought of as a framework for developing modules or lessons that (Merrill et al., 1996):

i. Increase and enhance the possibility of learning.
ii. Makes the acquisition of knowledge and skill more efficient, effective, and appealing.
iii. Encourages the engagement of learners so that they learn faster and gain deeper levels of understanding.

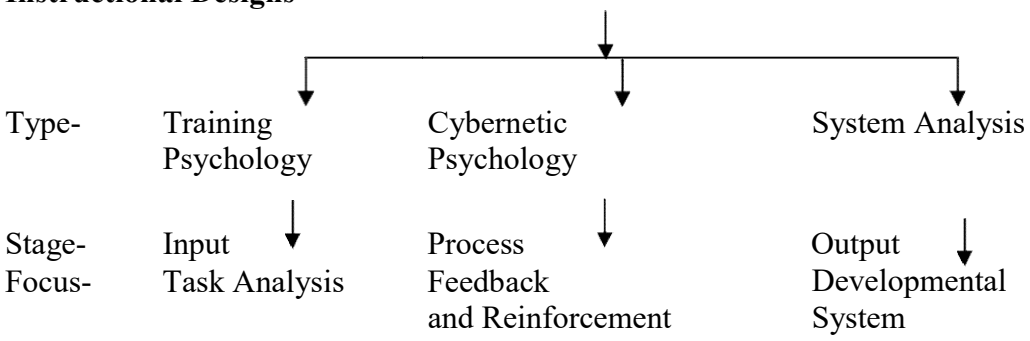
In a nutshell, instructional design can be thought of as a process for creating effective and efficient learning processes is the practice of creating instructional experiences which make the acquisition of knowledge and skill more efficient, effective, and appealing. The process consists broadly of determining the current state and needs of the learner, defining the end goal of instruction, and creating some "intervention" to assist in the transition. Instructional Design (ID) models differ from Instructional System Design (ISD) models in that ISD models have a broad scope and typically divide the instruction design process into the five phases of analysis, design, development, implementation, and evaluation that is often referred to as ADDIE.

Such type of thinking was introduced in 1950 and the different approaches have been evolved for the problems of education and training but the following three approaches are most popular.

1. Training Psychology
2. Cybernetic Psychology, and
3. System Analysis.

These three approaches of instructional designs are not contradictory but supplementary to one another in solving the problems of education and training. They are closely related to deal with the input, output and process aspects of educational technology.

Instructional Designs



Training Psychology emphasizes on task analysis and design of interrelated training components. *Cybernetic Psychology* focuses on dynamic feedback and self-regulation. *System analysis* focuses on the development of management system.

The above chart indicates that training psychology concerns with input aspect and its main function is task analysis. It evolves the structure of teaching and learning. The second approach cybernetic deals with process aspect of education and its major function is to provide reinforcement for leading the teaching. The third approach system analysis concerns with the development of organization and administration on the basis of output aspect of education.

1.3.3 STRATEGIES OF INSTRUCTIONAL DESIGN

Learning strategies determine the approach for achieving the learning objectives and are included in the pre-instructional activities, information presentation, learner activities, testing, and follow-through. The strategies are usually tied to the needs and interests of students to enhance learning and are based on many types of learning styles (Ekwensi et al., 2006). Learning strategies basically encompass the entire spectrum of a learning environment, to include processes, such as media, methods, technologies, and styles. Following are the strategies of instructional design:

1.3.3.1 Active Learning

Learning is often accomplished in a passive manner by having instructors or content transmitted to the learners for them to absorb. Whereas active learning involves the learning by being engaged in the instructional process by means of such activities as exploring, analyzing, communicating, creating, reflecting, or actually using new information or experiences. This active process of learner involvement differs from the conventional hierarchical instruction model where those who know, teach those who do not know. Active learning is not only a new experience for some instructors, but also a new experience for some learners. Since these learners might have not of encountered this type of learning or perhaps had a prior negative experience, special attention might be needed.

1.3.3.2 Blended Learning

Most definitions of blended learning follow the concept that it is a *blended* solution between e-learning (on-line or click) and classroom learning (face-to-face or brick). Blended Learning can combine the positive aspects of the two learning environments, classroom-based learning and e-Learning (Bonk & Graham, 2006). Blended learning is a mix of delivery methods that have been selected and fashioned to accommodate the various learning needs of adverse audience in a variety of subjects.

This method can include any combination of any of the above delivery methods (Mc Sporran & King 2002). Thus, *Blended Learning* is the use of two or more distinct methods of training. This may include combinations such as (The ASTD eLearning Handbook):

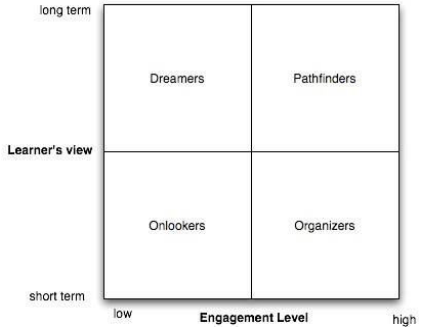
a) blending classroom instruction with on-line instruction
b) blending on-line instruction with access to a coach or faculty member
c) blending simulations with structured courses
d) blending on-the-job training with brown bag informal sessions
e) blending managerial coaching with e-learning activities

1.3.3.3 Just in Time Learning

Just-in-Time learning (JIT) provides a learning solution when it is actually needed, rather than on a deferred basis. It can be automated, such as web based; or having coaches on stand-by for such needs. Although used for a very long time, the modern Job- Performance-Aid traces its modern roots to the JIT method. It began as a printed card that contained step-by-step instructions for performing a specific task. The worker did not have to memorize the steps. This method of providing an alternative to improving job performance opened the door to other interventions to changing job performance. Job or performance aids are considered instructional interventions because they also mediate knowledge and skills problems. However, performance aids are not really intended to produce learning, as they are a substitute for learning. Learning that does occur as a result of using the job aid (surely considerable at times) is incidental.

1.3.3.4 Learners' Framework

Bill Moggridge (2007) writes about a framework that is geared towards developing web interfaces by showing a person's needs and behavior for a particular project or task. This framework could also be used for learners. This framework is a two-by-two matrix with a vertical axis describing the view of the learner, with a long-term view at the top and a short-term view at the bottom. The horizontal axis shows how engaged the learner is, with low engagement on the left and high engagement on the right:



In the top right hand corner are *Pathfinders* who are fully engaged and take a long term perspective. Below them, in the bottom right-hand corner, are *Organizers* who are highly engaged but take a short term view. Next door to them, in the bottom left-hand corner, are *Onlookers* who take a short term view and have low engagement. Above them, in the upper left-hand corner, are *Dreamers* who have a long term view, but have low engagement.

1.3.3.5 Formal and Informal Learning

In a formal learning environment the training or learning department sets the goals and objectives, while informal learning means the learner sets the goals and objective. In addition, if the organization (other than the training department) sets the learning goals and objectives, then it is normally referred to as *non-formal learning*. Thus, in a formal learning episode, learning professionals, such as instructional designers or trainers, set the goals; while a non-formal episode has someone outside of the learning department, such as a manager or supervisor, setting the goals or objectives.

Two other terms worth mentioning are incidental and intentional learning, which basically refers to the intent of the learning objectives. An intentional learning environment has a self-directed purpose in that it has goals and objectives on what and/or how to learn. Incidental learning occurs when the learner picks up something else in the learning environment, such as the action of a model that causes him or her to lose focus on the learning objectives or goal and focus on an unplanned learning objective. Thus, formal learning is normally always intentional. Informal learning is intentional if the learner sets an objective or goal for herself and incidental if the learning occurs haphazardly or serendipity.

1.3.4 Suggested Questions

1. What is Instructional Design?
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2. What is do you mean by just in time learning.
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3. Differentiate between Active learning and Blended learning?

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4. Differentiate between Formal and Informal learning.

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1.3.5 Summary

Instructional design is the systematic process by which instructional materials are designed, developed, and delivered. It is the process by which instruction is improved through the analysis of learning needs and systematic development of learning experiences. Instructional designers often use methods, strategies, technology and multimedia as tools to enhance instruction. It is the systematic development of instructional specifications using learning and instructional theory to ensure the quality of instruction. To sum up, it is the entire process of analysis of learning needs and goals and the development of a delivery system to meet those needs. It includes development of instructional materials and activities; and tryout and evaluation of all instruction and learner activities.

1.3.6 SUGGESTED READINGS

1. Advanced Educational Technology - Sharma, R. N., & Chandra, S. S.(2003).
2. Learning from Media: Arguments, Analysis, and Evidence - Clark, R.(2001).
3. The Educational Technology Handbook: A Comprehensive Guide : Process and Products for Learning – Hackbarth, S.(1996).
4. Instructional Design Strategies and Tactics - Leshin, Cynthia B., Pollock, J., & Reigeluth, C. M.(1992).

M.A. (Education)Part-II **Paper-I**
(ICT in Education)

Lesson No. 1.4 **Author: Dr. Jagpreet Kaur**

Instructional Design: Different Methods

Structure of Lesson

1.4.1 Objectives

After reading this lesson, the students will be able to

1. Understand the concept of active learning.
2. Differentiate between different methods of instructional design.
3. Differentiate between Fishbowls and Lockstep.
4. Explain the concept of Program learning.
5. Explain the concept of Personalized system of instruction.
6. Familiar with the term teacher competencies for ICT.

1.4.2 METHODS OF INSTRUCTIONALDESIGN

Methods and strategies are the various tools that not only deliver the instruction, but also foster the acquisition of performance. Learning methods are the conditions which can be implemented to foster the acquisition of competence (Glaser, 1976). It helps to shape information that compensates for or supplants the cognitive process necessary for

achievement or motivation (Clark, 2001). A method is normally thought of as a particular procedure for accomplishing or approaching a task. On the other hand, a strategy is more of a comprehensive plan of action designed to achieve a major goal. Given under are methods of instructional designs:

1.4.2.1 Action Learning

The roots of action learning can be traced to action research, a concept and term originated by Kurt Lewin in the 1940s. Action learning is continuous process of learning and reflection with the intention of getting something done. It does not use project work, job rotation, or any form of a simulation such as case studies or business games. Learning is centered around the need to find a solution to a real problem. Most action learning processes take from four to nine months to complete. Learning is voluntary and learner-driven. In addition, individual development is just as important as finding the solution to the problem. Teams of learners with diverse backgrounds conduct field projects on complex organizational problems requiring use of skills learned in formal training sessions. Action Learning can be viewed as a formula: [L = P + Q]: i) Learning (L) occurs through a combination of, ii) programmed knowledge (P) and iii) the ability to ask insightful questions (Q). Five basic elements of action learning are the problem, set, client, set advisor, and process.

1.4.2.2 Boot Camp

While the Armed Services traditionally used boot camps, other organizations occasionally use them in order to accelerate learning through immersion type learning. Boot camps normally have smaller classes than conventional ones with typically a dozen learners or less. Applicants are screened to ensure they have a certain level of knowledge of the subject matter so that other learners are not slowed down in the rapid learning environment. Boot camps are held away from the learner's work environment so there will not be any distractions, normally run from one to two weeks, and immerse learners in one subject for 12 to 16 hours a day to prepare them for a certification test. The advantage of this type of training is that the teachers get an up-and-running performer back within a short period of time. While the disadvantages include that learners will lose their newly acquired skills if they are not used right away due to the rapid pace in which they were acquired, and some learners like the slower pace of traditional learning programs.

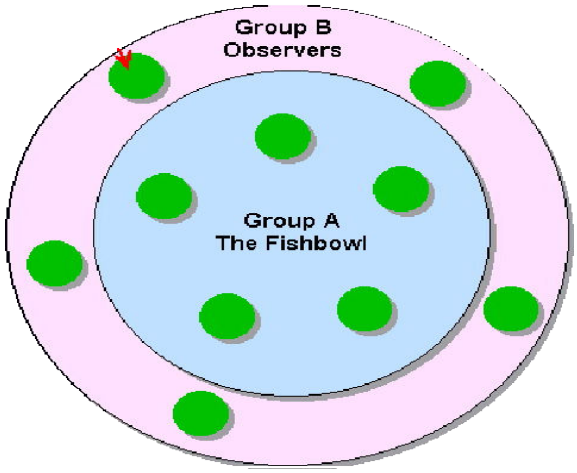
1.4.2.3 Coaching

Coaching is about increasing an individual's knowledge and thought processes with a particular task or process. It creates a supportive environment that develops critical thinking skills, ideas, and behaviors about a subject. Although it is closely tied to training, it is more personal and intimate in nature. Coaching has been defined as

i. The processes of encouraging the individual to improve both job skills and knowledge (Hahne & Schultze,1996),
ii. To assist in problem solving or mastering new skills (Bittel & Newstrom,1996),
iii. and the process of providing others with valuable information so that the organization learns (Schon,1983).

1.4.2.4 Fishbowls

Fishbowls are used for dynamic group involvement. The most common configuration is an "inner ring" (Group A), which is the discussion group, surrounded by an "outer ring" (Group B), which is the observation group. Just as people observe the fish in a fishbowl, the "outer ring" observes the "inner ring". Whereas most small groups normally have 3 or 4 learners, the fish bowl normally has 4 or 5 learners in group A, and 4 or 5 learners in group B. This tends to get the discussions going better as people are normally somewhat self-conscious about being observed. Once the learners get used to each other, then you can reduce the size of the groups. If the anxiety of being observed is too great to do the activity, have them discuss it. The anxiety should dwindle once it comes out in the open. They will get a lot more out of the activity if they are not inhibited in the discussion. The most that you should ever have in each group is 10 learners (10 performing and 10 observing). Too large of groups allows some of the learners to "hide" (not contribute).



Group A is given an assignment, such as a discussion or exercise to perform, while group B observes. After 10 to 30 minutes, the groups exchange (group A observes while group B performs the activity). They can either perform the same activity, a modified version, or a new activity. The group observing will either observe the process, the content, or both depending on the desired outcome. In the example exercise listed below, the learners are mainly observing a process as the desired outcome is to learn "observable behavior." While another fishbowl exercise might have the observers concentrate on the content so that a process or procedure might be improved. After the activity, you can have each group give feedback to each other, either on a group to group basis, individually, or in pairs. If you feel that the learners are not ready for public feedback, use the one-on-one or two-on-two method.

1.4.2.5 Lockstep

This platform has the learners proceeding at the same pace. It requires fewer instructors and is normally more easily managed than self-paced platforms. One of its main advantages from a learner's point of view is that it is highly social in nature. It is often the medium of choice for most training sessions. One of the main disadvantages often leveled at lockstep is that the pace is set for average learners, but there are no average learners as we all have special learning requirements and styles. However, you can adapt to individual learning differences when they are having difficulty with the task as lock step is NO Trobot training. Yes, everyone goes along at basically the same pace, but having skilled instructors allows a great deal of adaptability in this type of environment.

1.4.2.6 Mentoring

Bozeman and Feeney (2007) define mentoring as a process for the informal transmission of knowledge, social capital, and the psychosocial support perceived by the recipient as relevant to work, career, or professional development. It entails informal communication, usually face-to-face and during a sustained period of time, between a person who is perceived to have greater relevant knowledge, wisdom, or experience (the mentor) and a person who is perceived to have less (the protégé).” The two most common terms used to describe the person being mentored are “mentee” and “protégé”, while two-lesser used terms are “apprentice” and “student.”

1.4.2.7 Personalized System of Instruction

PSI is also known as the *Keller plan*. First described by Fred Keller in *Good Bye Teacher - Journal of Applied Behavior Analysis* (1968). It is composed of small self-paced modularized units of instructions where study guides direct learners through the

modules. Unit tests are given on each module where the learners must show mastery by

scoring at least a 90%. Student proctors (invigilators) are used to help with individual problems and lectures are given for motivational problems only. PSI combines *mastery learning* with principles of reinforcement learning theory. The modules can consists of reading assignments, films, audio tapes, field trips, programmed instruction, conducting an experiment, conducting an interview, etc. The performance evaluations can be essays, multiple choice, oral exams, written report, etc..

1.4.2.8 Programmed Learning

Although Sidney Pressey (1927) originated programmed learning, B.F. Skinner (1958) popularized it. Skinner's approach has been called linear in nature and involves the

following features:

a) Learners are exposed to small amounts of information and proceed from one frame or one item of information, to the next in an orderly fashion (this is what is meant by linear)
b) Learners respond overtly so that their correct responses can be rewarded and their incorrect responses can be corrected
c) Learners are informed immediately about whether or not their response is correct (feedback)
d) Learners proceed at their own pace(self-pacing)

Branching programmed learning is similar to linear programmed learning except that it is more complicated because it attempts to diagnose the learner's response. It usually involves a multi-choice format. After the learners have been presented a certain amount of information, they are given a multiple-choice question. If they answer correctly they branch to the next body of information. If they are incorrect, they are directed to additional information, depending on the mistake they made.

1.4.3 Developing teacher competencies for ICT

	Knowledge Acquisition	**Knowledge Deepening**	**Knowledge Creation**
Understanding ICT In Education	Policy Understanding	Policy Application	Policy Innovation
Curriculum and Assessment	Basic Knowledge	Knowledge Application	Knowledge Society Skills
Pedagogy	ICT-enhanced Teaching	Complex Problem-solving	Self management
Application of Digital Skills	Application	Infusion	Transformation
Organization and Administration	Standard Classroom	Collaborative Groups	Learning Organizations
Teacher Professional Learning	Digital Literacy	Networking	Teacher as Innovator

1.4.4 SUMMARY

Instructional design is the systematic process by which instructional materials are designed, developed, and delivered. It is the process by which instruction is improved through

the analysis of learning needs and systematic development of learning experiences.

Instructional designers often use methods, strategies, technology and multimedia as tools to enhance instruction. It is the systematic development of instructional specifications using learning and instructional theory to ensure the quality of instruction. To sum up, it is the entire process of analysis of learning needs and goals and the development of a delivery system to meet those needs. It includes development of instructional materials and activities; and tryout and evaluation of all instruction and learner activities.

1.4.5 Suggested Questions

1. What is the difference between method and strategies?
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2. Differentiate between Fishbowls and Lockstep method?
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3. Differentiate between Coaching and Mentoring.
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4. Explain developing teacher competencies for ICT.
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1.4.6 SUGGESTED READINGS

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