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General Methods of Teaching

EDU301

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General Methods of Teaching (EDU 301)

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Lesson No.1

CONCEPT OF TEACHING

Objectives:

- Perceive teaching as a social, political and ethical activity.
- Describe teaching perceptions as culturally and socially embedded.
- Use different metaphors to define teaching and teachers.

Short interviews from three people were taken to know their perspectives about teaching and teachers.

Interview 1:

Teachers are the future makers of young generation. Teaching is a very respectable profession. Regarding this, teachers have some expectations that he will wear a hat of many roles. The roles are of a good communicator, evaluator, decision maker, class manager and member of a team or group. Teachers must play all these roles with complete responsibility. My philosophy of choosing teaching as a profession is that I want to motivate my students to learn in a way that has positive influence on what they think and act. I see teacher as a gardener and teaching strategies as a fertilizer to grow the students just like a seed. At the end, I must say that learning process in the classroom will never stop. Students learn from the teachers and teachers learn from the students.

Interview 2:

Teaching is a noble profession. Teacher is the source to impart knowledge to the students. The goal of teaching must be to provide the students with conceptual knowledge rather than focusing them to rote learning or memorization, so that they should not face problems in their practical lives. Teachers are the agents who can bring change to the society. Teacher is a path or a road map on which the students travel to get their destination or goal.

Interview 3:

Teaching is a self-oriented profession which serves to guide nation to access successful future. I adopted my career as a teacher because a teacher helps the students to become what they want to become. It is expected from a teacher that he should act as a professional educator who considers the needs of the students.

Assumptions about teaching:

- Teaching is a noble profession.
- It is an activity to impart knowledge.
- It is a way of developing certain desirable behaviors among students.
- Teaching is an activity. It is way to teach people discipline, to teach students discipline.

Different perspectives of education in history:

The important role is of the Prophets and saints who teach in informal settings.

Informal education is education that is not given in proper schools. And if we see, Buddha,

Pythagoras, Jesus Christ, Prophet Muhammad (S.A.W) and Karl Marx They all did it in informal organizations.
Informal settings are important means of learning.

Apprentice ship model: is also a way of learning. A person who wants to learn a skill spends a certain period of time with a skilful person. In this way, the person who doesn't have the skill, learn those skills.

It is based on Vygotsky's work, which involves peers working closely together with a teacher in joint problem solving. e.g. workshops and skill-learning centres.

Assumptions:

- To understand how things actually developed, and who the prominent people are, who worked in this area?
- It was 16th century, actually which perceptions about education, teaching and learning developed. In past, except Socrates, Plato and Aristotle, rest of the people thought education as a means of status quo.
- Extra-curricular activities are always considered as extra.

What seems philosophy of education of Prophets?

- To equip people with basic literacy
- To give information
- To make them learn skills
- To bring societal change

If teaching is not bringing societal change, then probably teaching is not fulfilling its spirit. If we believe that teaching is about bringing societal change then we really need to reflect or transform our actions so that we are able to bring change.

Discussion:

- How research takes/define teaching?
- How other people have taken/perceive teaching?

In opinion of Educationists or other people: (about role of the teacher)

Educationist: 1

There was a focus on functions or process of instructions and behavior, but now in modern times, a role of a teacher and the expectations attached to it are completely different.
The fast and foremost is consideration of a teacher being an agent of change. The one who could bring change to the society, one who would have some kind of outer box thinking. The role also demands the teacher to be a collaborator. It is no more a one-way process in which empty pitchers were filled up but its totally a two-way process of teaching and learning. And finally, the role also

demands not only of a facilitator but of a person who can trigger off higher order critical thinking skills.

Educationist 2:

The role of a teacher is very important in building the character of the students and in enhancing his natural skills. In old times, the role of the teacher was just to come, deliver a lecture, give the students tests and quizzes, assignments and check them, give them grades and that's it. In modern times, the teacher is an agent of transformation of the students from less skilled individuals to skilled individuals which have good skills for doing their work and are also responsible citizens.

The role of a teacher is changed from a lecturer to an agent of transformation. Teachers should interact with students more than they do in previous times. Now method of teaching is called interactive teaching. Teachers involve the students in learning.

Teaching as a social, political and ethical activity:

- **As social activity:**

  Man is a social animal because it lives with other people, it socializes with other people. It is necessary for its existence and emotional strength to stay with other human beings. When we say that teaching is a social activity, it means that teaching can't be done in isolation. It needs people with whom teaching can be done. So, it is essentially a social activity.

- **As a political activity:**

  If we say that teaching is a political activity then teacher needs to have some perception and teacher need to discuss those ideas with the students. Actually, both of them should work together for a social change. Because political ideas are important not only in the sense of politics, politics means a set of ideas. Teacher must share ideas with the students so that they can work for a change in society. If education is not serving this purpose and teachers are just providing the students with the content knowledge then essentially this teaching is not a political activity.

- **As ethical activity:**

  It is a duty of a teacher to fulfill his responsibilities ethically. Ethics include that teachers need to be committed to their profession, they need to be honest, and dedicated. If teachers are not exhibiting the above then they are not taking it as an ethical activity. It is also important because teachers are role model for students. So, if a role model is not performing these duties ethically, then definitely this role model will not be a good example.

Teaching perceptions as culturally and socially embedded

Different cultures have different perceptions about education. The perceptions of education in Pakistan are different from other countries. In Pakistan there are urban and rural cultures and perceptions in both cultures are different.

Research says that the perceptions are socially and culturally embedded. Perceptions of teachers in Pakistan are different from the teachers of other countries. Although in Pakistan, there are different cultures and people living in those cultures hold different perceptions on education and teaching.

A survey was conducted for the clarification of this concept. In this survey, some teachers were selected from rural and urban areas, and some from the private and government schools. Then the ideas of the teachers and parents of the students were analyzed to see whether they differ or not.

- Firstly, the teachers from urban schools say that it is their responsibility to teach discipline to the students. The same was the perception of parents, they say that teachers are very respectable and must teach students discipline and behaviors. And students must obey them.
- Secondly, the teachers from government schools of the city say that their role is to teach the students how to read and write. Because these students come to school to learn how to read and write so that they can get jobs in factories. The parents also respond the same, they say that their sons may get jobs in factories or some other work that they can do easily. The parents do not expect high potential jobs.
- Thirdly, the opinion of teachers from the private schools is that they are the facilitators. Their responsibility is not only transmitting the content knowledge to the students but finding their hidden potentials. Parents respond the same that they are paying fees and it is the responsibility of the teacher to nurture the potentials of their children.

The important thing in the above survey is the "Cultural difference". We are living in a status stratified society, so the students studying in the government schools belong to low income group, their parents and teachers also think the same. So, we can say that perceptions on teaching are culturally and socially embedded.

Metaphors on teaching and role of teachers:

There are different metaphors of teaching, actually what we think about teaching is our metaphor. The metaphor is something that tells that how you take teaching?

If we think that teacher

- **Is a source of light:**

  Imagine that teacher is a sun or a candle; it is a source of light. It is spreading its light everywhere. The students don't have light; the teacher is giving light to students i.e. his knowledge.

- **Is like a tree**

  Imagine if a teacher is a tree, it is giving his shadow to everyone. The one who come to that tree will definitely get shadow and fruit of knowledge.

- **Is a gardener**

  If teacher is a gardener, and use the teaching strategies as a fertilizer to grow the students just like a seed.

Thoughts of these perceptions:

- Is there no knowledge gain, if there is no teacher?

- Teachers teach manners and behaviors.
- Who decides that certain behaviors are appropriate and others are not that appropriate?
- Do children really learn discipline in schools?
- A formal education comprises of a basic education that a person receives at school.
- Informal means unofficial and it takes place outside of the standard school setting.

Lesson No.2

TEACHING AS A PROFESSION

Objectives:

- Identified and reflected upon common misconceptions in Education, Teaching and Learning.
- Reflected upon the statement "Teaching is an Art and Science."
- Reflected upon the criteria for professional and moral obligation of professionals.

Some misconceptions in teaching:

- **Schools are isolated places.**

  Sometimes teachers ask students not to exhibit certain behavior in schools e.g. sometimes they ask students not to shout but teachers themselves are shouting. It is actually very disappointing that whenever teachers ask the students not to shout, their own voice level is very high. Definitely, teachers are also the product of society; they have also learnt those behaviors in their homes and schools. So, it is very important not to consider schools as isolated places. Teachers believe that schools are isolated places that are totally detached from the society which is not true.

- **Education is about learning of different subjects:**

  This educational view has vocational orientation. The word "Vocational" identifies use for job or utility for job market. It means that if we are sending the students to schools to learn different subjects, we want them to get prepared to get admissions in professional colleges. If they get admissions in professional colleges, they will become competent professionals. Education is serving the purpose of getting jobs in the job market. Now how can we claim that teachers are agents of social change? Most of the times we focus on teaching of different subjects and we assess students on performance of these subjects. We are always testing their knowledge but we just forget that purpose of education is much more than teaching students these subjects.

- **Learning is exploring different subjects:**

  According to Friere: **"In fact knowledge is created, when we act and reflect."** Knowledge about different facts is stratified knowledge. Your objective knowledge has its own importance but that is called static facts. Subjective knowledge is also very important. Subjective knowledge is something that is learnt by reflecting, acting on something. Learning is not only about exploring the static facts but it is to explore the knowledge.

- **Drama or debates are extra or co-curricular activities:**

  These are neither extra nor co-curricular activities but these are all curricular activities. These are actually meaning of holistic development of a child. **Holistic development** means complete development; a child needs to develop physically,

intellectually, ethically, socially and spiritually. Unfortunately, when we say that aim of schools is to teach only different subjects, we do not focus on the holistic development of a child. So, it is really important for us to understand that participation in these kinds of activities is not something wasting time rather it is very important for their holistic development. Holistic development of a child requires participation in games, debates, dramas etc. we should provide these opportunities where students perform in dramas, develop their speaking skills by participating in debates or dramas. Similarly, essay writing competitions so that they can develop writing abilities. We should actually allocate time for these activities in their timetable so that they carry out such kind of activities.

- **Silence promotes learning:**

  Teacher asks the students not to talk. They have a misconception that "Learning is when there is silence rather complete silence". Teachers do not go through theories or research that is why this misconception is so dominant in our schools. We know that learning is when there is sharing of ideas. There is a concept of peer learning, children learn from their peers, they actually learn more from their peers than they learn in schools by teachers.

Is teaching an art or science?

Idea of **"Teaching is an Art",** was developed by William James in 1891.So, an artist is able to create things. If we say that teaching is an art then we are expecting that teacher needs to be very imaginative, innovative, teacher must have the skills that an artist possesses. There is also a drawback that when policy makers claim that teaching is an art, they say that teachers are born teachers as artists are born artists. If teachers are born artists then we actually deny the importance of professional organizations or professional trainings. So, if we say that teaching is an art we must not say that teaching is by birth, or these are innate capabilities that could not be learnt.

Science is an organized body of knowledge. Organized body of knowledge means that it is very systematic. It has some research underpinnings and theoretical underpinnings. Research and science go side by side. The claim that teaching is a science; it shows that there is research in teaching. All the theories of teaching are based upon research, research in psychology and sociology. It is actually true that teaching is an art and science.

The criteria for professional and moral obligation of professionals:

Like all professions, teaching also has some standards and criteria.

Criteria to be a professional:

- **Learning a profession involves learning many concepts and principles of that profession.**

For example, if we consider medicine as a profession then there are number of key concepts involved in it. The students learning medicine needs to understand all the principles and concepts of that profession. We cannot compare a compounder to a doctor because a compounder does not know all the basic concepts and principles. The knowledge a compounder acquires is far less than that of a doctor. So, when we talk about a profession, we actually assume that the professional has acquired the knowledge of that particular subject.

- **A profession has a body of techniques and they may be transmitted:**

  Every profession has its own **techniques**. A cameraman knows the techniques to handle camera, a doctor or surgeon knows how to handle medical instruments. Knowledge of the skill gained must be practiced, as you know that "practice makes the man perfect". It is important for the professionals that they must know the skills of their profession.

  Transmission of skills

  It is actually believed that in professions, if a senior person has acquired certain skills than that person can transmit those skills to a junior person.

- **A profession is internally organized and self-disciplined (code of ethics):**

  Internally organized means that there are different professional organizations that tells the professionals that what they have to do. E.g. Pakistan Medical Association, Engineering Council, Institute of Accountancy is also an organization that tells the chartered accountants that how they have to practice their profession.

  Self-Disciplined: means that the professionals are ethically bound to follow some norms and rules which are set by their organization. They develop their own code of ethics and do not violate them.

- **A profession has a social function:**

  We are living in a society where we need to follow law and order and if there is any problem then we really need to go to court, so law profession is important as social function. When we talk about social function, those occupations are called professions which the people need rather people cannot survive without that profession. It should be the need of the people. So only that job is considered as profession which is based on people's need.

- **A profession allows independence or Autonomy:**

  There are certain professions which have strong internal organizations where they can take decisions.

  There autonomy is at individual level as well as collective level. E.g. a doctor has the autonomy to prescribe medicines to patients. If there is a serious patient, then a group of doctors to decide the treatment of that patient.

How can teaching be considered as profession?

- Concepts and principles in teaching profession:

  The students who are enrolled in 4 years B.Ed. program have the curriculum. This is basically a content which is based on all the concepts and principles to be learnt e.g. they will learn about how students learn? Philosophy of education, methods of teaching, educational research, assessment & evaluation etc. so all these subjects will provide them the knowledge which is a core requirement to be a teaching professional.

- The techniques learnt by teachers:

  Every profession has its own techniques. Some teaching techniques are: how to motivate the students? What is its theoretical background? You can motivate children by a motivational strategy, but the same strategy cannot motivate elders. In the same way, a teacher must know the techniques to teach different subjects. Because each subject has different demands or flavours and teacher needs to know the difference between the teaching of English, science or mathematics and other subjects.

- Is teaching internally organized and self-disciplined:

  Every profession has its organizations; Teachers unions in Pakistan are serving the purpose of protection of the teachers' rights. There is a society named as "Society for Pakistani English Language Teachers" (SPELT) which organizes different workshops and other developmental programs for the teachers.

- Teaching as a social function:

  We all believe that teachers have a very important social function. It is very unfortunate especially in Pakistan that mostly teachers are teaching different subjects, they are concerned about grades of students, they are not concerned about their holistic development. It is obvious that teaching has a prime social function but unfortunately, it is not been taken care of in Pakistani context.

- Teacher in Pakistan have individual autonomy or not?

  In Pakistan, teachers don't have the autonomy. He/she doesn't have the powers of decision making. There is no representative of schools who is involved in educational policy making. Curriculum is formed under Ministry of Education many times as in 2006, 2007, 2008 etc but when this curriculum is sent to schools, teachers are supposed to teach that curricula. They neither are not supposed to go beyond those curricula. School management decides that which subjects must be taught to the students. There is no autonomy given to the teachers.

What future teachers actually need to learn is:

You need to develop a belief that:

- We are living in a changing world, thus being professionals, we constantly need to upgrade our knowledge. Being a teacher, you really need to equip with every new research that is

coming on motivation, pedagogy or any other. It can't be done unless you believe that you need to learn and need to change. So, it is said that "To Learn Is to Change"

- You need to acquire the knowledge of foundations of education, pedagogical knowledge, pedagogical content knowledge, assessment and evaluation and teaching techniques and skills.

- **Foundation of education**: you will learn in the 4-year program about philosophy of education, psychology of education etc. these are actually the foundations of education.
- **Pedagogical knowledge:** pedagogical knowledge means the knowledge about how to teach the students.
- **Pedagogical content knowledge:** every subject has its own demands or flavors, so there are different ways to teach different subjects.
- **Assessment and Evaluation:** being a teacher you should know that what to assess? How to assess? Why to assess? Similarly, how to report results? How to use data? All these things need to be acquired to be a good teacher.
- **Teaching techniques and skills:** you must know the teaching techniques and skills that are expected from a good teacher.

Things you have to learn, when you want to be a professional:

- Teaching skills:
- General teaching skills: - Planning lessons
- Classroom management:
- Assessing pupils learning
- Motivating pupils
- Managing pupils' behavior

Develop professional values and practice:

Professional values for teachers are:

- Commitment
- Honesty
- Intellectual honesty
- Reflection in action. Reflection on action

There should not be gap in what teachers say and what do they do. Because if there is any gap then they would not be able to present themselves as true role models. So, being professionals, we should have certain knowledge of the profession. We should have skills but at the same time, we need to exhibit those dispositions which make us good role models.

Lesson No.3

PROFESSIONAL BEHAVIOURS AND CONTEXT OF SCHOOLS

Objectives:

- Reflected upon the principles for professional behaviours.
- Analysed educational, social and collegial context of schools.

Principles for professional behaviours:

- **Commitment to the students:**

An educator needs to strive to help each student realize his/her potential as a worthy and effective member of the society. A teacher needs to effort individually that every student must realize his/her potentials and reach to the maximum level. If we are not successful in realizing the potential of every student, then actually we are not committed to the students. The level of commitment to the profession must be to the range of every student. In most of the cases, teacher really appreciates high achievers. At times, a teacher is very much concerned about the learning of low achievers. So, the teacher mostly focuses on the low achievers or the high achievers but the students with average learning are ignored. They also need the attention of the teachers as other high and low achievers.

Educators work to stimulate the spirit of inquiry and acquisition of knowledge. We are inquisitive by nature. When a child grows up, he asks many questions about his surroundings. He wants to know what and how is happening around. But when he is sent to school, normally he asks many questions but those questions are not answered properly. So, being educators, we need to keep that spirit of inquiry in depth rather we need to stimulate that spirit e.g. if a student is not habitual of questioning in class then we need to develop that habit in him.
If we do not develop that habit then ultimately, the students will not enjoy their acquisition of knowledge. Everything seems a burden to them. Being educators, if we say that we are very committed teachers then we really need to raise the potential in each child in our class and we need to stimulate the spirit of inquiry and acquisition of knowledge.

- **Commitment to the profession:**
    1. Raising professional standards
    2. Professional judgment
    3. Influencing policies
    4. Professional organization

The educators need to exert every effort to:

- **Raise professional standards:**

If teaching is a profession, then what are the standards for teaching? A teacher needs to know

- **A pedagogical content knowledge:** the subject a teacher is going to teach to class 8th must know the content of that subject and the methods to teach that particular subject.
- **Communication skills:** communication skills must be so clear that a teacher can convey lecture to the students easily. A teacher must have a good eye contact with the students. A teacher must be able to read their verbal and non- verbal cues.
- **Assessing skills:** a teacher must know how to assess learning of the students. A teacher must know different assessment methods.
- **How students learn:** a teacher must know how students learn e.g. if I am a teacher of language, I must know how students learn their first language and how they learn their second language. A teacher must know the learning theories as well.
- **Recent developments:** a teacher must know the recent developments related to the profession. Recent development means the recent research on the profession. Different theories to teach and assess the students.

If I claim that I am a professional teacher, then I must come up to these standards. But the point is to raise the standards not only to meet them. To meet the standards is a minimum requirement, but a good professional is the one who go one step ahead to those standards. We educators really need to raise the professional standards.

- **Promote a climate that encourages the exercise of professional judgement:**

  A judgement that is given by a professional himself is a professional judgement e.g. in education, if a teacher is giving a judgement about the students that he has a good vocabulary but he is weak in grammar. This judgement is a professional judgement because this judgement has evidence on which the judgement is made. If a judgement is made by parents, they do not have direct involvement with the education of the child as the teacher has. So, we will say that is not a professional judgement.

  This professional standard demands from us to create a climate that promotes the professional judgement. This climate can be created through parent-teacher meetings where parents are told about the role of the teachers, teacher's expectations from the parents as well as students and the community. In this way, we are going to educate teachers as well as the community. We cannot achieve this standard by being indifferent.

- **Achieve conditions that attract persons worthy of the trust to careers in education:** Unfortunately, our own self-image is that we could not get admissions in engineering or medicine or computer science so that is why we have come into teaching.

  So, we have to change our own self-image as well as of the others regarding teaching as a career. We have to advocate that make teaching your first career option. As far as our own image

cannot be changed, we could not convince others. Being teachers, we need to advocate teaching as a career.

- **Assist in preventing the practice of the profession by unqualified persons:**

  Unqualified means that those people are teaching who do not have degrees in education i.e. B.Ed. or M.Ed. but they are teaching and they are considered good teachers. We must have to stop such practices that unqualified people must be replaced by the qualified.

  In government sectors, if you want to be teachers then you need to get a degree in education. But unfortunately, in private sectors and specially in street schools there are many teachers who are unqualified. They started teaching after their matriculation or intermediate exams. As a result, there is no education, there is just schooling.

  So, if we say that we are professional teachers, then we need to show our commitment to the students and we need to show our commitment to the profession. We need to raise professional standards. We need to promote a climate that encourages exercise of professional judgement. We need to advocate teaching career and we need to stop practices of unqualified people.

Key context of schooling:

Some interviews were taken from the people to know their views about schooling. The brief view of those interviews is given below one by one.

Interview 1 (Parent):

We sent children to school to become a better human being. They may know what is right and what is wrong. They can get better job opportunities. The more educated the child is the better job he will get. There are lots of activities in school. The child learns the attitudes of winning and losing. Students get self-confidence through schools.

Interview 2 (Student):

I like to go to school because there are number of activities like colouring and painting. I like my teachers because they speak to me very politely. They do not scold the students and it must not be allowed in schools.

Interview 3 (Teacher):

School is a platform where children's moral, physical, emotional and ethical development takes place. A teacher is responsible in the cognitive development of a child. A child considered school as a new place and feel difficulty in adjustment. But it is the responsibility of a teacher to provide him with such environment that his social development can take place. In schools, not only different subjects must be taught but also there should be co-curricular activities.

Assumptions on schooling:

- **Group orientation activity:**

Schooling is not about a single person; it is a group orientation. A successful school is the one whose group orientation is so strong.

- **Schools are composed of many different types of people, sects, religion, classes and economic beliefs:**

It is very unfortunate that sometimes we think that wearing a same uniform will also make their thoughts uniform. They are never alike; they are diverse people coming from different classes, economic beliefs, and different religions.

- **Schools follow a certain curriculum:**

Educationist named the key context of schooling as:

- **Educational**
- **Social**
- **Collegial (Professional)**
- **Schooling in educational context:**

If we assume that teaching of different subjects is a part of schooling then these subjects are called an important part of the schools. Then we should help the students to learn the content of the subject at different levels. These are:

- **Literal level:** it means that whatever you teach the students, the students get it well. E.g. If you teach them some definitions, they can learn them. If you taught them some facts, they can understand them.
- **Application level:** whatever the content is taught to the students, they must know its application as well. E.g. you teach the students about map reading, and then you ask them to tell you what map reading is? They will tell definitely. But can they find any location from the map? Can they use the map in their practical life? It is a teacher's responsibility to teach them in the way so that they can identify different locations using the map.
- **Higher thinking levels:** educational context is not about memorizing different facts and concepts. It is not coping things from the board or books. Educational context is much more than that. It is actually developing thinking skills among students. It is about creating creativity. It is about developing questioning skills among students.

Social context of schooling:

A sign in the Singapore International Airport reads "Welcome to Singapore: where our only National Resource is Our People."

- What does this sign board indicate?
- What is the responsibility of a school in Singapore?

This statement shows that in schools the most valuable thing is not its building, computer labs or multimedia rooms but the people. Teachers are bound to develop social capital of the people, not only students but all of the people.

Social capital:

- **Sum of interpersonal relationships:** the person who has many contacts or relations is considered as he has more social capital. Can we live in isolation in schools? Definitely, no. because there is group orientation in schools. We need people. We live with people.

  No one can actually live in isolation.
- So, we have to increase the social capital of every student. (It is the responsibility of a teacher to increase the social capital of every student. Most of the times, teachers come to the class with lesson plan, teach the lesson to the students. They expect from the students to listen to the lesson, they give them written work and then leave. There is no time for the students to communicate with each other except in break or after school. It is the responsibility of the teacher to increase the social capital of students by organizing group activities. Instead of doing things alone, they may communicate with each other. In this way, they will increase their thinking skills also. We are not teaching in a school to an individual but it is actually a group-oriented activity. Students must know that how to resolve conflicts? How to solve problems? The interpersonal skills of the students are improved when they work with their opponents instead of their friends. We need to make the students learn that all students are diverse and we need to learn how we communicate with different kinds of people.)

Collegial context of schooling:

Is characterized by or having power and authority vested equally among colleagues.

"Collegial context is something that emphasizes that power and decision-making should be shared among some or all members of the organization."

(Bush, 2003)

Power is shared among some or all members of the organization who are thought to have a shared understanding about the aims of the institution.

Reflect upon the following statements displayed in the school staffrooms:

- **"School business is not discussed here"** it means that the matters of schools are not discussed in the staffroom. People don't like to talk about textbooks, students, performance of the students, examination papers, or issues of classroom management in the staffroom. It means that in this school the collegial context is too weak. Colleagues are not support of professional development. Whenever we go into profession, we always have to learn from people, the seniors are our assets. If they do not discuss the things with us how can we develop professionally? People in this school are not ready to grow as the statement in their staffroom shows.

- **"We believe in sharing ideas, work and food"** the statement shows that the teachers in this school are good colleagues. Because they want to share the ideas so that they can learn from each other. They want to share the work habits so that they become the support for their colleagues.
- **"Let's establish a learning community"** it shows that the community working in a school is a learning community. We all learn from each other. A teacher is the most important learner in the

class. Because he has to explore the realities of every student. Their intellectual abilities and how he has to enhance them. A good teacher is the one who actually strives to help each student achieve their maximum potential. At times, we are unable to identify the realities of every student and we need the support of our colleagues. And in a learning community we can get support of our colleagues very easily.

- **"My colleagues are my mentors"** the statement shows that there is respect for the mentors and we have to learn from them. It again indicates the sharing of ideas.
- **"Relaxing time"** this statement also indicates as the first statement that school business is not discussed here. This is our time to relax. When we talk about profession, we need to raise professional standards. When we wrote in staffroom that it is a relaxing time, we are not meeting the standards even how we can raise the professional standards.

So, when we talk about the collegial context, we need to ensure that we are going to learn from our colleagues. They should be our strength. We need to grow professionally.
Collegial context is not restricted to the schools rather now it has become web based.

So, when we say that we are professionals we need to ensure that we maximize this collegial context we learn from each other.

Lesson No. 4

INCENTIVES AND RESPONSIBILITIES OF TEACHERS

Objectives:

- Analysed teachers' incentives and their level of functioning.
- Reflected upon the teachers' decision making and responsibility.
- Analysed the terms: Teachers' efficacy and reflective practitioner.

Incentives for teachers:

According to research, following are the incentives for the teachers:

- **Recognition as an excellent teacher (reflected in students' warmth, enthusiasm, appreciation).** The question here is the recognition to the teachers should be given by government of Pakistan? Or from the schools? According to research, the best recognition is got from students and not from the government or the school administrators. The warmth, respect and appreciation in the eyes of the students for the teacher are the actual recognition. This recognition is so appreciating that the teachers get energizes.
- **Respect of colleagues:** there was an organization, whose motive was the following statement:
  "**The esteem of our colleague is the foundation of power**" If you want to be powerful and if you want to asset then you need to have respect and your esteem should be very high. Actually, when you are doing someone's esteem high, then there is another feeling of efficacy. Feeling of efficacy is very important for the teachers e.g. there are number of activities in schools like morning assembly, debates, games, plays etc. teachers are very competent in the school, they are teaching their subject very well but when they are asked to organize such activities they feel that they can't do it well. But if their colleagues start motivating them and say that you are able to organize such activities. This is the feeling of efficacy and there is a great role of the colleagues in developing this feeling.
  This feeling is also an incentive. Teachers who do not get this incentive actually leave the profession quite early.
- **Working with other professionals:** this is also an incentive that if you got an opportunity to work with other professionals, you will feel energize. But if you are working in such an organization where you are not allowed to work with other professionals like if you are a math's teacher, you have to work with other math's teachers or if you are a language teacher you have to work with other language teachers but not with other professionals. So, you may not be motivated.

What are different motivating factors and incentives for our Pakistani teachers?

Some interviews are taken from the teachers in Pakistan to know their motivation factors. These are discussed below:

Interview 1:

Money is only a motivating factor that insists you to go to your job in routine regularly. But the incentives that are really important are the primary and secondary sources with which the students interact with you in their every aspect of life. We feel affiliation motivation that we are affiliated with the students in so many aspects. We get an opportunity to develop competence not only in ourselves but the students as well. You are the source of motivation for the students not only in terms of your profession rather you are also helping them in their daily life routines as well. That is the biggest achievement for a teacher.

Interview 2:

As a teacher trainer, I feel that motivation factor is something when student gain positive change in their thinking, behaviour and attitude. By the end of the day, I feel happy that I help them in bringing change in them.

Interview 3:

When there is no motivation, you cannot work properly at your working place. A teacher should be self-motivated. If a person is not self-motivated, then he could not perform a variety of tasks. By being in an organization, I have learned many things from many people. Besides that, the workshops and seminars also play a very important role in motivation of the teachers. These tell us where we stand and what we can learn from others. Recognition as a teacher is also motivating. Students come to you and they feel satisfied after you answer their questions. This shows that you are there to help somebody out. The students, the way they benefit from you, the way they seek help from you is also a motivation.

Common assumptions from the above interviews:

- **Recognition:** recognition from the students is actually a motivating factor for the teachers.
- **Esteem:** where the teachers think that their self-esteem is becoming lower, they don't want to work at that place.
- **Growth (working with other professionals):** teachers want career growth. They want growth in their learning. They want to learn the new methods of teaching, classroom management and other new activities. E.g. in an educational institute, you may start your career as a lecturer, then move to assistant professor, then associate professor and professor. But unfortunately, in schools, there is no professional growth seen.

Teacher's levels of functioning:

1. Intentionally Disinviting
2. Unintentionally Disinviting
3. Unintentionally Inviting
4. Intentionally Inviting

1. **Intentionally Disinviting:**

   In this state of functioning, a teacher does not invite people to give you suggestions. There is no sharing of ideas.

2. **Unintentionally Disinviting:**

   When you are working at a place for a long time. You realize that it is not a good norm, that you are not sharing your ideas. You must share your ideas and ask for advice.

3. **Unintentionally inviting:**

   In some cases, teachers start sharing their classroom management with other teachers unintentionally. It means that they do not want to share but share the things with others unintentionally. E.g. in a staffroom, a teacher is saying that I could not finish the lesson on time which I have planned. You also become the part of that conversation by saying that it happens to me sometimes also. Now actually you invite suggestions on how to resolve this problem unintentionally.

4. **Intentionally inviting:**

   This is the highest level of your teaching development. You come to realize that you didn't know everything and you need development. You are able to identify your flows and mistakes. And you need help and advice from your colleagues. You are intentionally inviting the people to advice you.

Teacher as a decision maker:

There are some common questions that will show that whether the teachers have the power of decision making or not. These questions are discussed below one by one.

1. **What to teach? (No autonomy)**

   Teachers have no autonomy when the content of the subject is decided or selected. If a teacher is working in a school system, then the school decides that what content should be taught to a particular class. If we talk about government sector, the books published by the Punjab textbook board or the content which is decided by the ministry of education will be taught. There is no autonomy of a teacher.

2. **How to teach? (Autonomy)**

Teacher has the autonomy of how to teach in a class. He can decide which teaching method should be used.

3. **How to manage class? (Autonomy)**

   Teacher has the autonomy that he can manage the class in the way he feels feasible.

4. **How to assess pupil's learning? (Autonomy)**

   Teacher has the autonomy in this context also. He can assess the students' learning according to the methods he teaches.

5. **How to give feedback? (Autonomy)**

   Teacher can give feedback about every student. Because he is the one who is directly involved in his learning.

6. **Which resources to be used in classroom learning? (Autonomy to certain extent)** Teacher here also have the autonomy to certain extent because resources are provided by the school administration and now the teacher can use them accordingly.

7. **Which activities to be used? (Autonomy)**

   Teacher can manage different activities in the school for the moral, social and ethical development of a child. A teacher must use only those activities which maximize students' learning.

Teacher's responsibilities as a decision maker:

Being a teacher, I need to:

1. Learn about learning styles of students and use strategies which match with learning styles.
2. Manage classroom to maximize pupil's learning.
3. Give constructive feedback to maximize learning.
4. Use different assessment strategies to maximize students' learning.
5. Use relevant low-cost resources.

Reflective practice:

To explain reflective practice, I will first explain the light of reflection. The light of reflection is "bouncing back of light to create an image." Teaching reflection is related with the light reflection for better understanding, the definition of teaching reflection or reflective practice
is:

"Answering some key questions to create an image of the classroom teaching and learning." The definition means that there are certain questions that teacher must answer by himself. He must notice his classroom environment that if there are 30 students in a class, how much students are answering the questions asked at the end of the lesson. How many students participate in discussion? How many students participate in activities? These questions must be answered by the teacher himself. The answers to these questions will actually tell the teacher that what the environment of his class was. So, **reflective practice** is very important for a teacher. Being a

professional, I need to raise standard of my profession and reflective practice is definitely one of the standards of teaching profession.

Reflection is of two types:

1. Reflection in action
2. Reflection on action

1. **Reflection on action** means that you have to answer some questions so that you may know what the environment of your class was.
2. **Reflection in action** comes from experience. Once a teacher is in class, she/he needs to reflect on all his/her actions. The reflection on every action at the same moment when the action is being taken is reflection in action.

   Basically, reflection is the means of creating a dialogue. A teacher is creating dialogue to himself and as a result he knows his strengths and weaknesses. Reflective practice is an important thing which we need to develop. To be a reflective practitioner, means a lot of hard work and attitude to learn.

Lesson No.5

CONCEPTUAL CHANGE, LEARNING THEORIES AND MODELING PROCESS

Objectives:

By the end of the lecture, you will have reflected upon:

- The term conceptual change.
- The formula for teacher's growth.
- Theories on how children learn.
- Social cognitivism and modeling.

Outline of the lecture:

- Conceptual change
- Teacher growth
- How do humans learn
- Beliefs on learning
- Modeling effects
- Modeling process
- Social cognitivism

Most of the times, teachers required memorization of the facts and concepts from students.

> "***Even students who have been well trained and who exhibit all the signs of success. Typically, do not display an adequate understanding of the materials and concepts with which they have been working."***
>
> **(Howard Gardner)**

Conceptual change:

What actually most of the teachers do is that they focus on the **missing knowledge** of the students instead of conceptual change. Conceptual change is important but it does require time. It is difficult to accomplish conceptual change. We must not provide the students with superficial knowledge but the deep learning is a conceptual change.
(Teacher is more interested in covering the syllabus instead of bringing conceptual change in the students)

Teacher growth:

Teacher growth is also a conceptual change:

Knowledge + Experience + Reflection = Growth

If any single element is eliminated or missed from the above statement then it is not growth. If you have knowledge and experience, it is necessary for growth that whatever you have gained from your experience you must reflect on that. E.g. if you teach mathematics to grade 2 students a year and then you are supposed to teach mathematics again in the next year to grade 2. You have same notes and textbooks that you used earlier. You teach mathematics to grade 2 for the next 5 years in the same way then there is no growth. You are just using your experience but there is no change. But if a teacher gains experience to teach mathematics to grade 2 students and at the end, reflect upon his experience is actually growth. By the end of the year, he will think that what techniques must be use to improve students learning. What motivational strategies work and which motivational strategies do not work. These things are actually part of your reflection. If you are reflecting on the things, it means that you will teach the students the next year in a much-improved way. It means that you are developing yourself professionally. So, teacher growth is also a conceptual change and it requires three elements. These are: knowledge, experience and reflection.

How do humans learn?

Before we discuss theories on how children learn, there are some questions that must be taken into consideration. And their answers will be discussed through theories.

1. How does a child learn to talk?
2. How did you learn different skills like cooking/ gardening/ stitching/ cycling/ using dictionary?
3. How do people learn to debate?
4. How do people learn to perform in drama?
5. Did you learn multiplication before addition**?**

"Knowledge is actively constructed by learners."

Nolan and Francis (1992)

If you look at the question # 2, can you learn cooking without you cook? Can you learn stitching without doing it? Can you learn to use dictionary without using it? Definitely, no. so it is true that knowledge is actively constructed by learners. What do we teachers do in the classroom is we start teaching concepts to the students. The students are just listening to the lecture; they are not actively involved in learning.

If you look at the question # 1, that is how a child does learn to talk? If we do not allow a child to talk or to explore different words of vocabulary, he cannot lean a language. It again shows that knowledge is constructed by learners.

- **Prior knowledge greatly influences learning.**

Why is it necessary to learn addition before multiplication? Because multiplication is repeated addition. If a child does not know addition, then he can't learn multiplication. If a prior learning of a student is good, then you can bring conceptual change very easily. It is important for a teacher to know that what is the students' existing knowledge or prior knowledge. Because it actually influences

learning. If a student has no prior knowledge about a concept, then he will take more time in getting it. E.g. if a person has seen how to use injection, and you teach him to use it. He will learn quickly as compare to the one who has never seen an injection. So prior knowledge influences learning.

- **Learning is there when teachers try to help learners change their cognitive structures instead of focusing on their own teaching.**

We have to judge the prior knowledge of the students and help them in learning new concepts by recognizing their prior knowledge. So that they may have cognitive change and deep learning. What do we teachers do that we focus on our own teaching e.g. a teacher is asked to cover the syllabus in 2 weeks, his focus will be on covering the syllabus and not on the learning of the students. So, good learning shift on focus to students.

- **Learning is a social endeavour.**

It is said that **"Learning is social by nature."** It is because learning is enhanced when you are learning in a group. We said in previous lectures that schools have group orientation. It is because the learning in schools is in groups. There are many things that cannot be learnt individually but in groups. In one in one process, a student made a mistake that is corrected by the tutor individually. But when a student makes a mistake in a class, many students learn from that mistake. Whether it was their mistake or not but they learn from them also. So, students learn in a social environment. And learning is definitely a social process.

Social cognitivism and modelling:

We will discuss the modelling process in social cognitivism. There are some questions to take into consideration:

1. How does a child learn to hold spoon?
2. How does a child learn to wear clothes?
3. How does a child learn to play?

The answer to these questions can be formulated by a video in which a child is copying an adult in studying, playing and praying. But according to assumptions and from books, the answer to these questions is:

"Much human behaviour is learnt by observing the behaviour of others."

(Bandura ,1978)

There are few things that can be learnt by observing others. According to Bandura, there are three things in modelling:

1. Observational learning.
2. Inhibitory effect.
3. Disinhibitory effect.

1. **Observational learning:**

Observational learning is something that we learn by observing others. There are number of people who learn things by just observing other people. If someone is cooking, you can observe them and learn how to cook food. You can learn cycling by observing, you can learn using computers by observing others. It means that we can learn many things by observation. Teachers are said to be role models because whatever teachers do, students used to copy them and learn. E.g. a small survey was conducted on impressions and it shows that the teacher whose hand writing was very good on the board, his students' handwriting was also very good and clear. But a teacher with average or poor handwriting on board shows the poor hand writing of the students as well. This is a new learning that is learnt by observing others

.

2. **Inhibitory effect:**

When you learn something, and then observe others, you think that it is not right. So, you left that thing. E.g. if a person is wearing new style clothes, you have bought the same dress as well. When you observe the other person and feel that the dress is not looking nice, you reflect on yourself and think that it might not suits me as well so you stop doing it. This is not a new learning. It is what you leave by observing others. To unlearn something that was learnt.

3. **Disinhibitory effect:**

Disinhibitory effect takes place when you think that whatever you have learnt is right and you can carry on with it. That is not a new learning. E.g. when a child is writing an alphabet wrong and his teacher is also writing it in the same way. The child gets ensure that the way in which he is writing is right because the teacher is also writing it in the same way. His learning gets strong in this way.

So, we may claim that modeling does affect children's learning.

Modeling processes:

There are 4 important modeling processes and research has established these modeling processes. These are:

1. **Attention**

In order to learn, you need to be paying attention. Anything that detracts your attention is going to have a negative effect on observational learning. If the model interesting or there is a novel aspect to the situation, you are far more likely to dedicate your full attention to learning.

2. **Retention**

The ability to store information is also an important part of the learning process. Retention can be affected by a number of factors, but the ability to pull up information later and act on it is vital to observational learning.

3. Production

Once you have paid attention to the model and retained the information, it is time to actually perform the behavior you observed. Further practice of the learned behavior leads to improvement and skill advancement.

4. Motivation

Finally, in order for observational learning to be successful, you have to be motivated to imitate the behaviour that has been modeled. Reinforcement and punishment play an important role in motivation. While experiencing these motivators can be highly effective, so can observing other experience some type of reinforcement or punishment?

Modeling can be made very effective if you take care of these four things. These are attention, retention, production and motivation.

And motivation is the most important term or process because attention and retention are the initial levels but motivation takes place throughout the learning process.

There is not only a single way to motivate students. Different teachers use different strategies to make children attentive in the class and make them motivated.

Social cognitivism:

We discuss in the learning theories that learning is an active process. Basically, students can get involved actively alone but the social process is still necessary. Because we are social beings, human beings are social animal and we live in groups. So when we live in groups, our learning will be enhanced due to group orientation.

Comments:

- **Social cognitive theory**, used in psychology, education, and communication, posits that portions of an individual's knowledge acquisition can be directly related to observing others within the context of social interactions, experiences, and outside media influences. In other words, people do not learn new behaviors solely by trying them and either succeeding or failing, but rather, the survival of humanity is dependent upon the replication of the actions of others. Depending on whether people are rewarded or punished for their behavior and the outcome of the behavior, that behavior may be modeled. Further, media provide models for a vast array of people in many different environmental settings.

Lesson No.6

LEARNING OF CHILDREN AND PERSPECTIVES ON INSTRUCTIONAL DECISION MAKING

Objectives:

- The prior knowledge and social context of learning as essential conditions of learning.
- Language, learning and development as interwoven areas.
- The three perspectives on instructional decision making:
    - Developmental
    - Behavioral
    - Cognitive

Outline:

- Prior knowledge and social context of learning as essential conditions of learning.
- Zone of Proximal Development (ZPD)
- Active learning
- Perspectives on instructional decision making
    - Developmental perspective
    - Behavioural perspective
    - Cognitive perspective

There is a video that shows the students learning. In this video the teachers ask the students to make words using different sounds. We will relate this video to Vygotsky's theory. Vygotsky was a Russian psychologist. He worked a lot on the theories of social constructivism. Vygotsky's theory about prior learning and social context included four major ideas. They are:

1. **Children construct their own knowledge.**

   Most of the time, teachers say the students that the knowledge is present in the book, and you must acquire the knowledge by learning. But Vygotsky says that the students do not acquire knowledge in that way rather they construct their own knowledge. Students can cram knowledge but they cannot construct knowledge.

   Vygotsky put a question mark to the following statement: if there is no construction of knowledge by the students, then can we say that students have learnt?

2. **Language plays an important role in child's learning.**

   Language is an important medium for learning. When a child doesn't understand a language then how can he learn a concept? Vygotsky says that when a child born; his ultimate purpose is that he wants to communicate with the people around him. When he starts communicating, he used many words like mama, baba etc. Before he can communicate, he only starts weeping

when he is hungry, when he wants to sleep etc., he communicates in weeping. But as the child grows up, he needs to learn language for communication. So, Vygotsky says that unless a child learns a language, it is very difficult for him to learn anything. Language is basically a developmental tool.

3. **Learning can lead development:**

Learning may be defined as behavioral change or any other change like thinking change etc. Vygotsky says that learning is there only when there is development. E.g. there are some people of the same age i.e. 60 years; you feel that one person is more mature than the other. The one who is more developed seems more mature. His learning or experiences are more than the other person. As a result of those experiences, we think that this person is more mature. On the other hand, a person with fewer experiences seems less mature.

There is a misconception in the Pakistani context, it is said that males are more mature, experienced and developed as compare to the females. It does not mean that females do not have intellect. They can also be more developed and experienced if they are given an equal opportunity to experience learning, and create their social capital. Their experiences will be equal to that of males and they would be equally developed. So, learning leads to development.

4. **Learning/ development cannot be separated from the social context in which it occurs:**

In the video, you have observed that the students who do not know the English language, don't know what are words producing sound of "pla". But when her peer told her what are those words, she understood and respond well. So, social context is very important. Prior knowledge is also very important. Teacher must try to know the prior knowledge of his students. It is not necessary that if there are 30 students in the class, all of them have the same prior knowledge. So, if a teacher tries to teach all students with a same method then all students cannot benefit from it.

Zone of Proximal Development (ZPD):

The gap between actual and potential level of a child is Zone of Proximal Development. Vygotsky is very famous for this concept of his theory.

Actual level is the initial level of child's learning and potential level is the level where a child can stand. The potential level is usually one step ahead the actual level. If student is at the actual level, he has the potential to come up to the potential level. The important role here is of the teacher, if a teacher helps the student, he/she can reach to the potential level very easily. The teacher helps the students at actual level of learning, or at the first level of any learning, it is easier for the student to go one step ahead of that level. When a student is standing at his potential level, he is one step ahead of the previous and needs the support of his adults or teachers again to go ahead of that potential level as well. E.g. if you are teaching mathematics to a student, you teach him about one-digit addition. You cannot take him straight to the concept of two-digit addition unless he is expert in one-digit addition by practicing it. You teach him the concept of ones and tens here. After he has learned one-digit addition, he couldn't start doing two-digit addition by himself. He needs the help

of his elders or teacher to help him. Now the student has jumped from the actual level to the potential level i.e. from one-digit addition to two digit addition. After that you give him the concept of ones, tens and hundreds, and he can go to the third level by himself i.e. three-digit addition.

Perspectives on Instructional Decision-making:

- **Developmental perspective**
- **Behavioral perspective**
- **Cognitive perspective**

If I am going to teach in a class, I have to decide that what I am going to teach and how it should be taught? How should I assess the students? How can I manage the classroom? All these things are the part of instructional decision-making. The perspectives beyond this decision-making are developmental, behavioral and cognitive. Piaget and Vygotsky are the key people who developed theories. These perspectives are important for the teachers because whatever they are going to teach to the students, they can make decisions accordingly. When teachers will take decisions according to these perspectives, the students will be more important in their eyes.

Developmental perspective:

If we take decisions in the class according to the developmental perspective and notices the theories of Piaget and Vygotsky, we will conclude the following.

Piaget's theory:

If followed by his theory, we will say that a child learns by himself. He plays with the things, get into different experiences and as a result he learns. Piaget's perspective is stage-wise i.e. a child will learn essential concepts at the first level then moves to the second and learns some other concepts like-wise. E.g. when a child born, he learns to sit at the first level. Then at the second level, his muscles get strong and he starts crawling, after that when his muscles get stronger, he starts walking. When his muscles get stronger than he starts running. These are linear stages of learning that at a particular stage a child will learn this thing and the second at the next level.

Vygotsky's theory:

Vygotsky also says that a child constructs his own knowledge. But according to him, social context is very important. He says that it is not a linear process that a child must learn stage-wise.

If a child's social context is so enriched then he can learn many things through his social environment. Whenever I will teach the students according to Vygotsky theory, I will first try to judge their prior knowledge. Unless I don't know that where the students stand, I can't help them in development and learning.

Behavioral perspective:

Behavioral perspective means that students may get any change in their behavior. The new concept you are going to teach to a student must be measurable and can be seen from his behavior that the certain concept has been taught. E.g. you taught the students about rural and urban life, after that their observable behavior will be seen when you give them the task to differentiate between urban

and rural life. Whatever the difference a child will explain, it will show his behavioral change. If a child doesn't know the differences before, you will notice the change that the child was not aware of the differences but now he is able to identify those differences. It means that the child has learnt. If being a teacher, I will take decisions according to the behavioral perspective then I will merely focus on the direct instruction. I will teach the students in such a way that at the end they are able to show that particular behavior or change in behavior. The preferred teaching methods in this perspective will be lecture method and direct instruction. When you are going to teach to higher classes, then teacher's decision-making comes from behavioral perspective. At that time, it becomes difficult for us to take decisions at developmental level. Lecturing is done with adults, if lecturing is done with children, it may not be useful.

Cognitive perspective:

Cognitive perspective is to develop students' academic and thinking skills from a novice level to a more expert level. Cognitive perspective can be related to ZPD but in that an adult's presence is important. In cognitive perspective, presence on adult is not necessary but complexity of task is important. If your target is to improve a child's thinking skills, then your task will be of such kind that a child will learn from them. E.g. if we write on board and ask the students to copy that on copies, or if we say that these things are written in your books, learn them, both are very low-level tasks. If you want to improve their thinking skill then you need to have projects with them.
Thinking skills can never be improved, unless you do not put them in a situation where they are supposed to think. If a person has high problem-solving skill, it means that he has experienced many situations where he has solved many problems and as a result, he has got this higher problem-solving skill. So, cognitive perspective says that if a teacher wants to take his/her child to a certain level of thinking then we need to provide that range of experience to those people. This perspective includes tasks like portfolios, projects, independent tasks, inquiry tasks etc. an important perspective of cognitive development is Active learning.

Active learning:

Active learning is where human mind is actively involved in constructing meaning of the experience. When a teacher is teaching in a class, this is not active learning unless there is no questioning in the class. When questions are asked from the students, then actually students construct meanings. A good teacher is the one who engages the students in active learning.

Summary:

- **In order to make students learn something, teachers must first understand how the students are representing a given concept or procedure.**

  When we understand that what is the existing knowledge of the students then we can develop them easily.

- **Children do have their prior conceptions and being teachers, we should first explore their prior conceptions.**
- **Speech is a powerful psychological tool that lays the foundation for basic structures of thinking later in one's development.**

We have learnt from Vygotsky's theory that speech is a tool as brick is the tool for the foundation of the building; similarly, speech/language is a tool for higher level of thinking.

- **Speech initially arises out of the need for a child to communicate with others who share his/her environment.**

A child speaks by his need. He speaks with the people who are there in his immediate environment. If a stranger comes to them, they usually do not talk in front of him.
As a teacher, we should speak and we should use this speech as a tool for learning. We should talk and we should let our children talk**.**

Learning can never happen in silence. Where there is silence, there is no learning. According to Vygotsky's theory, language, learning and environment is a social context. They are interlinked

.

COMMENTS:

- **Complexity of task** means that you give student task independently. He will work independently and will get cognition accordingly. If you give students easy tasks, he will get cognitive development slowly. But if you give him complex tasks, he will ultimately have higher thinking skills.

Lesson No. 7

KINDS OF KNOWLEDGE AND ASSUMPTIONS OF TEACHERS

Objectives:

By the end of the lesson, you will have:

- Identified different kinds of knowledge i.e. declarative, procedural and metacognitive.
- Identified lecturing, direct instruction and cooperative learning methods as useful teaching methods.
- Identified some key assumptions of teachers.

Outline:

- Declarative knowledge
- Procedural knowledge
- Metacognitive knowledge
- Teaching methods use to teach declarative, procedural and metacognitive knowledge.
- Key assumptions of teachers

  If teachers do not teach, students do not learn.
  - Learners learn best by working alone.
  - Learners need feedback on everything they do.
  - Students' tests indicate their learning.
  - Intelligence is a fixed capacity.
  - People learn in the same way.

Look at the following learning and place them in three different categories:

1. Using dictionary
2. Types of pollution
3. Dissecting frog
4. History of Pakistan
5. Community service
6. Research on school pollutants
7. Solving problems
8. Working in teams

In category 1: While learning about pollution and types of pollution, you are using your brain whether you are reading books or a teacher is telling you that these are different kinds of pollutants and environmental pollution is caused by these things. These are different ways to stop environmental pollution. These things that you are studying are becoming part of your memory. In the same way, history of Pakistan. To learn different facts and concepts are part of your knowledge. This kind of knowledge is called **Lecturing – Declarative Knowledge.** When you are learning in

such a way that you are declaring knowledge. Knowledge that has been declared either in the form of facts or in the form of concepts.

In category 2: There are two things, dissection of frog and using dictionary. Knowledge of such kind is **Direct instruction – Procedural knowledge.** If you want to search any meaning from the dictionary, you need to follow a certain procedure. In the same way, if you want to dissect a frog then you have to follow instructions.

In category 3: There is problem solving, community service, working with others, research on school pollutants. This is a knowledge or skill that if a problem has occurred in front of you then you are able to solve that problem. Working with others doesn't mean that you are working in a group. But you have to solve the problems while working with new kind of people. Similarly, when you are going for a community service, then you are working with the people. If you have learnt to live with the people then you can handle community service. Research is not something that is in your mind that you can conduct research in such a way. But it is actually practically conducting research. This is **Cooperative groups - metacognitive knowledge.**

1. **Lecturing – Declarative knowledge:**

   This is the knowledge that is declared in books, research papers, newspapers or you acquired that knowledge from your elders/teachers. There are two parts in this knowledge: **facts and concepts**. **Facts** are something that you memorize e.g. Pakistan came into being on 14 august 1947, this is a fact and students learn it as it is.

   There are many facts in general knowledge books of elementary level, and this is called declarative knowledge because it is the collection of different facts and students memorize it. **Concepts** are Newton's law, rules of grammar, writing patterns, and we say that these are also part of our declarative knowledge. Unfortunately, we very much focus on this declarative knowledge. We think that this is the most important knowledge and we used to test our students on this knowledge.

2. **Direct Instruction – Procedural knowledge:**

   This knowledge is a step ahead from that declarative knowledge. In which you have acquired the knowledge but still you need to know its procedures as well. E.g. you told a student that a frog is dissected in such a way, and its steps as well. And then you ask him about it by a written test that "what procedure is to be followed while dissecting a frog." A student gives the answer by stating all the steps of dissection. But procedural knowledge doesn't mean knowing the procedure, e.g. you know many recipes of baking, maybe you have read them in books or listened from anyone. It doesn't mean that you can cook them as well. Every student has different potential of learning. If you teach them to use dictionary, all students may not use it in the same way. Some students may find the word "Alter" by going through every page of alphabet A. But some will directly browse to the page where words start by AL and will find the word. So, every student has its own procedure to learn something and that

is procedural knowledge peculiar to that person. Procedural knowledge is not memorizing the procedures but which you have acquired through doing that procedure. Another thing that is involved in it is practicing. The more you practice, the stronger will be your procedural knowledge.

Teachers are just concentrating on covering the syllabus; they don't take the students towards procedural knowledge even. We do not allow the students to use the scientific apparatus in the labs. We show them the things in the classroom by demonstrating we are afraid that the students may not handle the apparatus carefully and it may break. Unless we do not allow them to use the apparatus, there is no procedural knowledge. All the skills are part of the procedural knowledge and these can be learnt only by doing.

3. **Cooperative groups – Metacognition:**

According to Wikipedia:

"Metacognition is cognition about cognition." E.g. a child does not know the concept of evaporation, but he learns that what he should do to learn the concept of evaporation. That is metacognition. We categorize this knowledge and in that the first thing was problem solving, having great declarative knowledge does not mean that you can be a good problem solver. Problem solving is your part of metacognition and it means that in a new situation, you can apply/use your declarative knowledge. You can transfer your learning in a new situation. So, this is also called as **transferable skill.** You may call it application of application. Creativity is also a part of metacognition. Learning to learn is metacognition. Metacognitive knowledge is actually of least focus in our schools. There is no focus of metacognitive knowledge in schools rather we teachers are not aware of that.

What are the methods to promote these three kinds of knowledge?

- Lecturing is the procedure to gain declarative knowledge. Because you just need to deliver facts and concepts. There are some teachers who organizes group discussions in the class, so declarative knowledge can be gained through discussion also. Through discussion, you can take the students to metacognition as well.
- Procedural knowledge is gained through direct instruction. You have to tell the student directly what he has to do. E.g. when students go into the schools, they learn to write different alphabets. The teacher is telling them how to write different alphabets. A child who is newly admission in the school could not follow the teacher, if the teacher writes all alphabets on board and ask them to copy. But he has to tell them by holding hand that how to write the alphabets. Hand writing is a skill and to teach this skill to students, teachers need to give them direct instruction by holding their hand and teaching them. So, direct instruction can be useful when you want to give procedural knowledge. You can never give the procedural knowledge through lecturing. Equipment handling is also an example of procedural knowledge. You have to guide every student that how to handle or use the equipment. It is not only that teacher shows them to use the apparatus. Procedural knowledge is acquired only through practice. So when we are

expecting a child to do something or his skills should be improve, then we need to give them direct instruction and feedback.

- Metacognition is gained through problem solving. Definitely, if you do not give the students problems, they can never learn to solve the problems. So, we need to give students such activities or tasks that involve their thinking and practical application as well. Team work is an important skill/knowledge that is metacognitive knowledge and it should be taught to the students. You can never give the students this knowledge unless you do not allow the students to work in groups. So, through team work you learn how to work in groups, how to resolve conflicts. Whenever you work in groups, there are many conflicts and disagreements. Metacognition is based on metacognition of declarative knowledge and metacognition of procedural knowledge.

Teacher's assumptions:

1. **If teachers do not teach, students do not learn.**

   Research says that students can learn by themselves, if there is no teacher. It is the responsibility of the teacher to maximize their learning time. They must facilitate the students so that they can reach to the maximum of their potential. This assumption is not true and it is also a misconception, because every student has its prior knowledge and if we do not test their prior knowledge, the students do not participate actively in learning. We think that we are going to teach the students from the beginning but it seems meaningless to them.

2. **Learners learn best by working alone.**

   Whenever we assign students a task, we want them to do it individually. If a student does not know something, we say that ask me, not your peers. We do not allow them to work in groups. There are two attitudes of teachers; firstly, we know that students cannot learn without a teacher, being a teacher, we are in a superiority complex that we know everything. Secondly, we say that students can learn individually or by working alone. We should not hold this assumption; we should hold this assumption that learning takes place best when there is some social or group orientation. As we study earlier that **learning is a social process**, if learning is a social process then we need to believe that learning takes place when children work in groups. If students are working alone and they do not succeed. Their self-esteem becomes very low; they think that they cannot have the things done. If they can have a helping hand, their self-esteem becomes higher.

3. **Learners need feedback on everything they do.**

   We always try to give students feedback and that feedback is of very low level that has no educational value. e.g. the words poor, good, excellent are the words used as feedback. We assume that if we do not give feedback, the students cannot learn. We develop attitude in students by feedback, students think that teacher will not check the homework so why we do it. This is because we cannot make learning enjoyable for them. Learning itself is a pleasure process. If the students will do everything for getting good feedback from the teacher, then

definitely they will not develop habit of life-long learning. If we want them to be life-long learners, we must make them self-motivated.

4. **Students' tests indicate their learning.**

What do we do in classes; there are tests on our mind every time i.e. weekly tests, monthly tests, midterms, final exams etc. unfortunately, every examination tests only the factual and conceptual knowledge of the students? And we think that we know who the brilliant students of our class are. It is not true because these tests are not associated with their learning. To test the learning there are many other possible ways, if we want to judge a student in art, we will ask him to draw something on the paper rather we ask him to write down on the paper how to draw things. Similarly, if we want to know how good a student can present, then we will ask him to present something and, in this way, we will judge his communication and presentation skill. It is said that English language teaching focuses on four things; speaking, listening, reading and writing. But in our board exams, students' reading comprehension ability and writing is judged.

We only judge their writing skill and never allowed them to speak in English, then how they can have command on English speaking skill. This is also a misconception that students' learning is always assessed by tests.

5. **Intelligence is a fixed capacity.**

Research says that IQ is not enough. There are multiple intelligence theories which say that every student has his own intelligence. Some students have more special intelligence, some students have interpersonal intelligence. There is a major focus on emotional intelligence. It is expected from schools that teachers must develop the emotional intelligence of the students as well. IQ is a redundant term these days. We make ranking of the students that these students are brilliant, these are of average intelligence and the others are low achievers. We mostly use the word in the schools and we feel satisfied by the word and that is 'slow learners. Learning depends on prior learning; everyone can be a slow learner in a new situation.

6. **People learn in the same way.**

People have different learning styles. But we teachers assume that all students learn in a same way. We use the same teaching method in the class and assume that every student has got the lesson according to our expectations. We are diverse people; we have diverse learning styles. So being teachers it is our responsibility to use those teaching methods by which all students can learn well. We are decision makers; we have the autonomy to decide what we are going to teach and how we are going to teach. How to assess the students. But we have to fulfil our responsibility also that we should teach every student with justice.

So, these are some assumptions that need to be challenged. We have to develop ourselves professionally and the necessary things for growth are knowledge, experience and reflection.

Lesson No.8

EDUCATIONAL EQUITY

Objectives:

By the end of the lecture you will have:

- Reflected upon the concept of 'educational equity'
- Reflected upon dimensions of diversity, these dimensions are: socioeconomic, physical, language, ability, and gender.
- Devised ways to promote socioeconomic, physical, language, ability and gender equity in your school.

Outline of the lesson:

- Educational equity
- Kinds of diversity
    - Socioeconomic diversity
    - Physical diversity
    - Ability diversity
- Categories of exceptionality
    - Intellectual
    - Communicative
    - Sensory
    - Behavioral
    - Physical
    - Multiple
- Language diversity
- Strategies to integrate address language diversity
- Gender diversity
    - Gender equity – Stereotypes
    - Research on language equity stereotypes
    - Strategies to avoid gender-bias
- Encouraging equity in classrooms.

(Observe a moss ace in the video lecture that is made by 7-year-old children. It was a 10/12 feet moss ace; every student was given A4 size paper to draw different things. Every student draws differently. You will observe that whole moss ace was made up of different components. In the same way, society is made up of different components/people. All the components of the moss ace were of the same size. Every student used the A4 size paper. They were same in the size but the pattern of every component was different. So, we can say that children think differently, so they

came up with different designs. One thing more you will observe that the colouring of every drawing is different. Some coloured the picture smoothly, while others have white spaces in their drawing. So, we can say that children of the same age may have different abilities).

Lessons learnt from the picture:

- The whole is made up of components
- Though components are of the same size but different in patterns and colors.
- Children think differently.
- Children vary in their coloring ability.

(Observe another picture in which the teacher is teaching the students some steps to do. This picture is composed of different kinds of people. Try to identify diversity and multiplicity.)

Lesson learnt from the second picture:
Children vary in their:

- Height
- Color
- Gender
- Responses
- Moods
- Dressing
- How can we expect them to think the same or perform same?

If there is such variation/diversity, how can we expect them to think the same or perform same? When they are different, they are different in their height, colour, gender, dressing, moods etc. it is definitely impossible to expect from them to perform alike. Being teachers, we need to know this thing and we need to believe in diversity.

Educational Equity

Let's discuss the purpose of schools in the view point of different educationists:

"Schools not only teach the students but also raise them."
(Sausa,2003)

To learn the concept of equity, it is necessary to understand diversity first.

Equity means that all students are treated equally well and that all school resources are shared equally. So, equity does not mean treating people equally by snubbing or scolding them. But it means that we must treat them well. Similarly, sharing of resources is also necessary and it must also be shared with every student.

Kinds of Diversity:

- **Socioeconomic diversity**

Socio means related to our society and economic means financially. So, socioeconomic diversity is diversity in family income, parental education, parental occupation and social status in the community.

Physical diversity

Elements of physical diversity are:

- Age: children may vary in their ages.
- Physical attributes: children may vary physically i.e. in their height, weight, colour etc.
- Impairment and disabilities: some students may have weak eye sight; it means that they have eye sight impairment. Some students are unable to walk appropriately or any other impairment or disability. But being teachers, it is important for us to know that people are different physically. Our full attention should not be to the students who are alike in some way or the other but we must know that all students are not equal and provide them with equal facilities in education. If we have some children who have physical impairments or disabilities, then we really need to address their needs.
- **Ability diversity**

  Ability diversity does not mean that some students have low IQ level or some have high IQ level but it is also seeming in the context of **exceptionality**.
  Something that is exceptional. There are different definitions of exceptionality up to 27 categories of it. The most important of them are:

Categories of exceptionality:

1. **Intellectual**

   Being teachers, we assume that there is lot of intellectual diversity in our class. It is not true because people have different experiences, IQ level is not much diverse. We say that these students are of high IQ level and others are of low IQ level and we label the students with the term 'slow learners. We accept that there is intellectual diversity, but we need to know that how we are going to measure intellectual ability in our class.
2. **Communicative**

   Communicative diversity means that students vary in communication skill as well. There are some students who stemmer very fluently, but the teacher needs to know that the students can't do that. It is a responsibility of a teacher to some extent to do speech therapy of the students. But it is not possible for a teacher in a great context. If a student is feeling

embraced in speaking while standing in the class then he should be allowed to do written communication.

3. **Sensory**

   Sensory diversity means that is related to your senses. There are some students, who listen loud; some become threatened because of loud voice. We must know that there can be sensory diversity in our class.

4. **Physical**

   Physical diversity means that students vary physically i.e. in their height, weight, color etc. physical diversity also comes up with ability.

5. **Multiple**

   In multiple diversity, dyslexia are included. It is a broader term; some students are more dyslexic and some are less dyslexic.

   A common thing that is seen in dyslexic children that some used to write 'B' instead of 'D' and some are confused with 'P' as '9'. If we feel that these are the problems with students then we need to address these needs. If you are teaching to grade 2 or grade 3, and students are doing such mistakes then it doesn't mean they are dyslexic. They are at their developmental stage. So, information of right and left brain is mixing up. This mixing can force them to do such mistakes. So, it is difficult to identify dyslexia before the age of 8 years. Being teachers, we need to know that there are certain children who have dyslexia.

Language diversity:

Every child has his own first language. Some have Punjabi as their first language, some have

Pashto, and some have Balochi etc. then there comes a second language, some children learn English as their second language while others learn it as a foreign language. So, language diversity is definitely present in our classrooms. If most of the books are written in a foreign language then how it may be taught? Students are not able to understand science concepts; the problem is that they do not understand the language in which those concepts are presented. To teach the students language you need to be bilingual, (bilingual means that if you are teaching them English and they know Urdu language, then you need to use both Urdu and English language in class). The research says that this bilingual mood may be ineffective for young children. So, another model was presented. That is known as **immersion model.** It means that you immerse the students in the new situation of language. This model says that if you are going to teach the students Urdu language then you should not talk to them in their first language. When you will use Urdu language in the class they will listen and try to speak in Urdu. As Vygotsky says: "**Language plays an important role in learning**". To know language diversity is important and to address it is more important.

Strategies to integrate address language diversity:

1. **Avoid forcing pupils to speak up immediately.**

If you want to teach students a new language. Then you must not force them to get immediately to that language. Give them time to think.

2. **Give them some print material.**

The second strategy that is used is to give them some written/print material. When a child is going to learn a second language, then a child comprehends more on reading material. So, if you are providing them with reading material then actually you are facilitating them to understand certain thing and also proving them with vocabulary.

3. **Try to talk individually to the students.**

There is language diversity in your class in terms of first language of the students and their language ability. When you are addressing the class as a whole then probably students are not going to develop their language ability. You must teach them on one to one basis.

4. **Start lesson with simple questions having 'yes' or 'no' answer.**

It doesn't mean that students are learning only yes or no in the language but actually when you are asking those questions, they are listening to the whole question and they are focusing on its vocabulary. They will learn how to ask questions and secondly, they will develop confidence in them.

5. **If possible, use satisfactory or unsatisfactory grading.**

Grade the students with satisfactory or unsatisfactory instead of 'fail' because the word 'fail' has a negative effect on the learning of the students. When children come up to a certain level by improvement then use the grading by pass or fail or use the grades A, B or C etc.

Gender diversity:

Gender diversity means difference in gender.

Gender Equity – Stereotypes:

- Girls start speaking early than boys but later, boys become sharper and more intelligent.
- Girls/women are gossipy.
- Girls are less committed to carriers.
- Girls perform poor in mathematics and science.
- Girls lack in decision-making so they do not hold key positions in institutes, societies or clubs.

Gender Equity – Research on the above stereotypes:

- A group of teachers and administrators in New Zealand were shown films of classroom discussion and asked who was talking more, the teachers overwhelming response was 'girls. In reality, boys in the film 'out talked' girls at a ratio of 3:1.
- In a study, it was also shown that men speak more and fluently interrupt women.
- New scientist Magazine reports: 'For the most part, the basic architecture of the brain, and its fundamental workings were thought to be the same for both sexes.'

- Parts of frontal lobe, which houses decision making and problem solving, are proportionally larger in women. (Research in Harvard Medical School)

Strategies to avoid gender-bias:

- Call on girls as often as you call boys.
- Pick those texts, pictures and movies which do not instil gender discrimination.
- Rotating responsibilities.
- Provide same learning opportunities to boys and girls.

Encouraging equity in classrooms:

- **Observe carefully:** If the student is performing a task, we must observe carefully about his needs. We must identify his language diversity, physical ability and his behaviour.
- **Set the tone:** We say that teacher is a role model, he is promoting educational equity. And others will learn from him.
- **Involve others:** you must involve others in learning. Unless you do not involve them, they will not feel the things. E.g. if you are working for the children who are visually impaired, you will make enlarged photo copies for them and for this purpose you will involve other people. They will also understand that it is to address the diverse needs.
- **Promote autonomy:** The more you make people independent; there will be more educational equity. If you keep people dependent, it means that you are not promoting equity.
- **Organize support groups:** If you are facing any issue of diversity, then you will find the solution by support of other people.
- **Celebrate learning:** To celebrate different ideas and learning of the students and appreciate them.
- **Celebrate diversity:** we have made uniform compulsory in the schools and expect that the students will also be uniform in their thinking. But we need to celebrate diversity.
- **Instil pride in workmanship:** workmanship means that you must be competent in your skill so that you can reach the level of excellence. So, we have to take students towards excellence with their diversity.

We are different beings, there is diversity. Being teachers, we need to celebrate diversity. So that we can promote educational equity in our schools.

Comments:

- The term **Dyslexia** is used while explaining multiple diversity among people. But this term is not explained clearly. Dyslexia means: Problems with reading, writing, spelling, symbols and numbers, because the brain misinterprets what it sees (visual) and hears (auditory). Dyslexia DOES NOT affect the intelligence of a person; in fact, many dyslexics are highly intelligent. Dyslexia is a disorder of the brain which causes the person to have trouble reading and writing. Although the person is actually smart and can comprehend basics, when it comes to reading, the letters look jumbled up and writing is even worse. It is manageable and a lot of famous

people have it and have gotten past it. If someone has it, they need help learning and eventually, they can overcome it.

CATEGORIES OF EXCEPTIONALITIES AND DEFINITIONS

BEHAVIOUR

A learning disorder characterized by specific behavior problems over such a period of time, and to such a marked degree, and of such a nature, as to adversely affect educational performance, and that may be accompanied by one or more of the following: a) an inability to build or maintain interpersonal relationships; b) excessive fears or anxieties; c) a tendency to compulsive reaction; or d) an inability to learn that cannot be traced to intellectual, sensory, or other health factors, or any combination thereof.

COMMUNICATION

Autism– a severe learning disorder that is characterized by" a) disturbances in rate of educational development; ability to relate to the environment; mobility; perception; speech and language; b) lack of the representational symbolic behaviour that precedes language. **Deaf and Hard of Hearing –** impairment characterized by deficits in language and speech development because of a diminished or non-existent auditory response to sound.

Language Impairment – A learning disorder characterized by an impairment in comprehension and/or use of verbal communication for the written or other symbol system of communication, which may be associated with neurological, psychological, physical, or sensory factors, and which may a) involve one or more of the form, content, and function of language in communication; and b) include one or more of the following: Language delay, disfluency, voice and articulation development, which may or may not be organically or functionally based.

Speech Impairment – A disorder in language formulation that may be associated with neurological, psychological, physical or sensory factors; that involves perceptual motor aspects of transmitting oral messages; and that may be characterized by impairment in articulation, rhythm, and stress.

INTELLECTUAL

Giftedness – An unusually advanced degree of general intellectual ability that required differentiated learning experiences of a depth and breadth beyond those normally provided in their regular school program to satisfy the level of educational potential indicated.

Mild Intellectual Disability - A learning disorder characterized by: a) an ability to profit educationally within a regular class with the aid of considerable curriculum modification and supportive service; b) an ability to profit educationally within a regular class Because of slow intellectual development; c) a potential for academic learning, independent social adjustment, and economic self-support.

Developmental Disability – A severe learning disorder characterized by:

a) an inability to profit from a special education program for students with mild intellectual disabilities because of slow intellectual develo0pment'
b) an ability to profit from a special education program that is designed to accommodate slow intellectual development;
c) a limited potential for academic learning, independent social adjustment, and economic support.

PHYSICAL

Physical Disability – A condition of such severe physical limitation or deficiency as to require special assistance in learning situation to provide the opportunity for educational achievement equivalent to that of pupils without exceptionalities who are of the name and age or developmental level.
Blind and Low Vision – A condition of partial or total impairment of sight or vision that even with correction affects educational performance adversely.

MULTIPLE

Multiple Exceptionalities – A combination of learning disorders, impairments, or physical disabilities, that is of such nature as to require, for educational achievement, the services of one or more teachers holding qualification in special education and the provision of support services appropriate for such disorders, impairments, or disabilities.

Lesson No.9

PLANNING AS A TOOL FOR SUCCESSFUL INSTRUCTION

Objectives:

By the end of the lesson, you will have:

- Reflected upon planning as a tool for successful instruction.
- Identified elements of planning
- Identified three domains of learning i.e. cognitive, psychomotor and affective.

Outline:

- Planning for successful instruction
- Key terms used in planning
    - Goals
    - Objectives
    - Instructional objectives
    - A strategy
- Is planning about decision making?
- Elements of planning
    - Topic
    - Grade level
    - Goal
    - Instructional objectives
    - Cognitive level check
    - Students' characteristics
    - Resources
    - Assignments or homework
    - Assessments
    - Additional learning needs
    - Time allotted
- Domains of learning (CAP)
    - Cognitive
    - Affective
    - **Psychomotor**

Planning for successful instruction:

- **Why do we need to plan?** Planning is important as there are three characteristics of master teachers.

- **Master teacher traits:**
- They are well-organized in their planning.
- They communicate their instructional objectives effectively to the students.
- They have high expectations from their students.
- **What to plan as a teacher?**
- **How to plan?**

Key terms used in planning:

- **Goals:** Statement of intent stated in broad term. Goal of a teacher is "A teacher is responsible to produce good citizen." Can we produce good citizens in 40- or 45-minutes lecture? Definitely no. but daily class lecture of 45 minutes can make a long time to achieve a goal.
- **Objectives:** A series of small action steps which are needed to achieve desired goal.

These steps are not integrated, these are in series. When we talk about series, we could not disturb the sequence of it. If any step is missed from it then ultimately, we could not achieve that goal.

- **Instructional objectives:** are those objectives which need to be achieved by the end of the lesson.
- **A strategy:** to understand what strategy is, you need to know the difference between method and a strategy;
- **METHOD:** To teach certain content to the students.
- **Strategy:** It is method which helps to achieve your objective.

Is planning about decision making?

When a teacher is planning something, is he taking decisions or not? The process of planning is very much decision-making process. Firstly, a teacher decides what to teach?
What students will be able to do at the end of the lesson? Secondly, he has to decide what resources are required to achieve certain goal? Which methods will be followed to teach certain content? You need to decide which strategies to be followed to achieve the objectives? And most importantly, you need to decide how much time will be given to a certain step in the lesson? You need to decide which homework should be given to the students? You need to decide how to assess students? So, the process of planning is a decision-making process. These decisions are taken by the teacher, if the teacher is not taking such decisions then ultimately, students are going to suffer. Because students will not achieve anything in the class. The 40- or 45-minutes period will not serve the purpose and this time is not maximizing students' learning. All these decisions are the part of decision making.

Elements of planning:

1. **Topic:** What teacher is going to teach?

2. **Grade level:** methods to teach sentence making to primary level students will be different from secondary level students. So, it is important for a teacher to know the grade level.
3. **Goal:** the specific subject you are going to teach, you must know its ultimate purpose? What you expect from the students to be able to? Whatever the goals you have selected must be student-oriented.
4. **Instructional objectives:** are those objectives that will be achieved at the end of the lesson. E.g. at the end of the lesson student will be able to label a diagram, or label four parts of a plant etc. Instructional objectives provide you a guideline for selecting teaching method, teaching strategy and resources also. Instructional objectives should be very specific, measure able, attainable, realistic and timed.
5. **Cognitive level check:** being teachers, when we plan a lesson, we also decide the strategy by which we can know that what students have learnt till a certain period of time. It is important for the teacher to know that what prior knowledge the students have. Teacher use many strategies to check the cognitive level of the students. Some teachers use questioning method, some teachers go for brainstorming. In brainstorming, a teacher writes some words or questions in a circle and asks the students to response. Students come up with different responses.

   Teacher does not omit anything; he writes the responses of every student. It is beneficial for the teachers to check the cognitive level of the students. It is also encouraging for the students that whatever they speak, teacher writes on board. In higher classes, questioning is frequently used for this purpose. So, it is important for the teacher to identify the strategy to check the cognitive level of the students.
6. **Students' characteristics:** Students have their own characteristics, there are students who are very good in doing things or they are kinaesthetic learners. Some students can learn only by observing. Some students love to listen to their peers; they learn from their peers; they are auditory learners. So, teachers need to know the characteristics of the students. Students' characteristics are the important elements of planning. It means that we need to decide what we teachers are going to provide for auditory learners, visual learners or kinaesthetic learners.
7. **Resources:** It is important for the teacher to identify the resources that will be used in teaching. E.g. board, activity sheets or multimedia, any other natural resources or classroom resources etc. if you do not plan a lesson and identify resources then ultimately, when you are in class you will be in trouble. Your students will talk a lot and you might face discipline problem.
8. **Assignments or homework:** teacher has to plan what assignments he/she is going to give to his/her students. What actually happen in our classes, we teach certain things and ask the students to complete the whole exercise in the class, but most of the students are unable to do so. Being a teacher, I will ask them to complete the rest of the questions at home. Homework should be a pre-planned thing; it should not cover the things that students are unable to do in the class. If students are unable to finish the exercise in class then it is a teacher's duty to help them complete the exercise in the next lesson. We should

not expect from parents to help their children learn new things. Teachers are responsible to teach the new things to the students.

9. **Assessments:** we also need to decide that how we will assess the students. What we do is only test the students through questioning. We try to assess every kind of learning through questioning. But it is not possible. E.g. if we want to assess how good your students are at sketching, you cannot ask certain questions from them. You ask a student that what the procedure of sketching is.

   If a student tells you accurate answer it doesn't mean that he is able to make a sketch. So, you cannot assess the students through questioning, different kind of learning requires different assessment strategy. So, when we plan a lesson, we must also plan the assessment strategy. The criteria of assessment should be based on the objectives.
10. **Additional learning needs:** there are students who have additional learning needs; there are some students who have weak eye sight, so you need to plan accordingly. You have to make the font of the worksheets larger. If you will not notice his eye sight, he will not be able to work in the class, readability is not there. It is not the fault of the student but of the resources. Whenever we are planning lessons, we need to take care of additional learning needs.
11. **Time allotted:** It means that if at the start of the class, we are doing brainstorming in the class then we should decide its time. Will it be for 5 minutes or 10 minutes? Or if we want to have some written task in the class, you have to decide that a written task will be for 20 minutes in the class. So, you have to allocate time for every activity in the class. Time allocation should be flexible. If you feel that students need more time on a certain task, you can always give them some more time to that task. But there should be some kind of time allocation while planning lesson.

So, we need to know the key elements of planning, because if we do not know elements of planning then probably, we will not be able to plan good lessons. Sometimes we miss very important elements of a lesson plan.

Domains of learning:

1. **Cognitive (Intellectual development)**
2. **Affective (Feelings/attitudes or holistic development and metacognition also comes under this category)**
3. **Psychomotor (Procedural knowledge)**

So, being teachers, we need to know these three learning domains. For simplicity we may say we need to give a CAP to each child in our class.

CAP: Cognitive, Affective and Psychomotor.

Have a look at the following and try to put these different kinds of learning under these three domains:

Riding a bicycle, stitching, Essay writing, Speaking, Cooperating, accommodating different ideas, respecting each other, Using dictionary, memorizing facts, solving mathematics sums.

Cognitive domain:

Use of dictionary, memorizing facts, Solving mathematics sums, Essay writing. These are all intellectual skills. And they are important for the students and teachers and most of our teaching and learning goes in this domain.

Affective domain:

Cooperating, accommodating different ideas, respecting each other. It is important for every single being, related to any profession. Or in spending the life these things are really important. We are not living in isolation, we work with others and if we do not have life skills, we will not be able to interact with each other. If we are not able to communicate appropriately with them, our learning is deficient.

Psychomotor domain:

Riding a bicycle, Stitching. These are very skill-oriented things where our motor muscles are involved. So, anything which involves our motor muscles is called as psychomotor domain. Whatever we do, in all physical activities our mind is always working. This is the domain which involves physical and mental work.

Comments:

- The term 'Master Teacher' is actually a teacher who has expertise on his subject and he ensures the quality learning of the students.
- **Kinesthetic learning** (also known as **tactile learning**) is a learning style in which learning takes place by the student carrying out a physical activity, rather than listening to a lecture or watching a demonstration. People with a kinaesthetic learning style are also commonly known as "do-ers".

Lesson No.10

BLOOM'S TAXONOMY

Objectives:

By the end of the lecture, you will have:

- Reflected upon 6 levels of Bloom's Taxonomy of cognitive domain
- Come up with examples of learning at different levels of Bloom's Taxonomy.

Outline:

- Bloom's taxonomy
- Knowledge level learning
- Comprehension level learning
- Application level learning
- Analysis level
- Synthesis level
- Evaluation level

First, you have to understand what Bloom's Taxonomy actually is? Here are 6 different types of learnings below, try to identify the common thing in it.

- **Recalling key names of Pakistan movement**
- **Defining noun**
- **Defining solubility**
- **Telling counting 1 – 20**
- **Naming 7 continents**
- **To tell Newton's third law of motion**

In all the above, the child has crammed the things that he tells. It does not involve high level thinking skill. These are the facts or principles that he has memorized by learning. If you ask a student any definition and he is using the same words as in the book, there is no thinking involved. He is telling what he has memorized. This level of learning in Bloom's Taxonomy is called "Knowledge level."

Bloom's Taxonomy:

Bloom was an educationist; he has a lot of contributions in identifying different levels of learning. In 1956, he developed his taxonomy but after 55 years, no learning objectives are forms without following his taxonomy. The word 'Taxonomy' shows classification. He says that learning can take place at 6 different levels and these levels are hierarchical. So, the first level of Bloom's Taxonomy was knowledge level or recall level, where actually students recall their knowledge. It is not about a new thing but what they have memorized, they recall it.

Knowledge level:

- **It is about recalling of information.**
- **It is about knowledge of data, events and places.**
- **Knowledge of major ideas.**
- **Mastery of subject matter.**

According to Bloom, this is the lowest level of learning. In schools we mostly focus on testing of this level. A book is given to students by name of 'General knowledge.' It contains facts and figures and we say to the students to memorize it. So, we do not deny the importance of questions of knowledge level but teachers tend to over use it, and the student who is not good at memorizing, does suffer.

Question cues:

Following are the words which indicate that the question is of knowledge level.

- **List**
- **Define**
- **Tell**
- **Describe**
- **Identify**
- **Show**
- **Label**
- **Who, When, Where?**

Comprehension:

Again, here are some questions, try to identify the common in them.

- **Describe two nation theory?**
- **State the differences between human eye and camera?**
- **What are functions of plant, root and stem?**
- **What did Goldilocks' do, when she went to bear's house?**
- **What are our rights and responsibilities as Pakistani citizens?**

The common thing in all the above is that the students are provided with the information about certain things first, either the information is provided by the teacher or they are getting that from the books or may be from any other source. And now they are asked to reproduce the given information in their own words. If students do not use their own words, how can we know if students have understood a certain concept or not? This is the level of understanding and in this level, we expect from the students to use their own words. E.g. the translation from Urdu to English or English to Urdu also comes in the comprehension level because we can check the understanding of the students. If words are translated one by one then it is not a comprehension level, comprehension level expects the students to read the text carefully, understand it and then translate it into a new language.
(In knowledge level, we do not expect from the students to use their own words while explaining anything. But in comprehension, first students get certain information and then something is expected from them.)

Comprehension level:

Words often found in comprehension level questions:

- **Describe**
- **Rephrase**
- **Put in your own words**
- **Contrast**
- **Explain the main idea**
- **Compare**

Application level:

Again, here are certain questions; you are going to identify common things in these questions:

- **Classify the following materials in transparent, translucent and opaque objects.**

- **Classify the given foods into vegetables, fruits and meat group.**
- **Use the formula.**
- **Breadth x Length = Area (to find out area of your geometry box).**

Children have learnt about transparent, translucent and opaque objects, teacher told them that the objects through which light could not pass are opaque objects. The objects through which the light can pass are transparent objects and the object which allows some light to pass through is translucent object. A child has learnt these things, if he tells the teacher as it is then it is knowledge level. If he tells by using his own words then it is comprehension level. But to use the knowledge in a new situation is application level. Now you give five things to the students to identify these three kinds of objects. These are: Cellophane sheet, paper, table, book, and wall. Now, if the students are able to identify that what are opaque, transparent and translucent objects then they are acquiring application level.

In second question, children are told about the food groups and then they are given different examples of fruits, vegetables and meat and they are asking to classify them. If the children know the exact difference between fruits and vegetables, then they will apply their knowledge and can classify them. If he does not know then the child is not able to classify food items.

In third question, there is a formula to find area. If the students are asked to tell the formula to find out the area, then it is knowledge level. The child knows the formula. But the teacher is saying, children know the formula but it is not enough they must know how to calculate the area, so he asks them to calculate the area of their geometry box. It is application level of learning. Only knowing is not important but to apply it in a new situation.

Application level:

Words often found in application level questions:

- **Apply**
- **Show**
- **Demonstrate**
- **Choose**
- **Illustrate**
- **Classify**
- **Use**
- **Write an example**
- **Draw diagram**
- **Observe and record**

The three levels discussed above are usually called as lower levels of learning. Students feel difficulty in mathematics because there is application level in it. But educationists say that application level learning is also a lower level of learning. It is although advance from knowledge and comprehension level but it is not so advance learning.

Analysis level:

Again, here are certain questions; you are going to identify common things in these questions:

1. **What factors did influence Quaid-e-Azam to formulate fourteen points?**
2. **Why do we need balanced diet?**
3. **The footprints left by the astronauts, Neil Armstrong and Edwin Aldrin, on the moon in 1969 are still there. Can you explain why?**
4. **After studying about developments in Malaysia, what can you conclude about the various causes of developments in a country?**

In the first three questions, we are asking about the reasons. The reason why Quaid-e-Azam formulate fourteen points? The reason why balanced diet is important? The reason why the footprints are still on the moon? But in the fourth question, reason is not asked. Here you are asked to conclude after seeing the causes of development in Malaysia.

After reading this story how would you categorize the hero's background?

Again, here will be some conclusions about how the hero's background influences him.

5. **Vaccination cures body against various diseases. How?**
6. **Why do fish survive better in cool water?**
7. **Human beings are polluting air. How?**

The above three questions are results. E.g. we all know that vaccination cures body against diseases, but the students have to analyse its reasons. It is different from the first three questions in the sense that in them you were asked to identify reasons and conclusions were not given. And in last three questions, conclusions are given and students were asked to give reasons to these conclusions. It is said that analysis is a higher-level thinking. When we talk about analysis, there is not one kind of analysis. It is said that analysis is about identifying causes. There are causes but conclusions are also important and the reasons for those conclusions. So, all these go to the analysis level.

Defining analysis level:

"Analysis level questions are higher-order questions that require students to think critically and in depth. Several answers are possible to an analysis-question. Analysis-questions expect from students to identify reasons, reach conclusions and analyze conclusions."
To analyse means to set things apart. E.g. if you teach students about addition, subtraction, multiplication and then division. And while teaching division, you ask them what mathematical operations are involved in division? It is analysis level question, in which the students will tell that both multiplication and subtraction are involved in division.

Word prompts used in analysis level:

- **Identify motives**
- **Why**
- **Compare/ Contrast**
- **Draw conclusions**
- **How**
- **Investigate**
- **Analyse**
- **Summarize**
- **Deduce**
- **Support**

Synthesis level:

Again, here are certain questions; you are going to identify common things in these questions:

1. **Write an appropriate title for the text.**
2. **Draw a painting to show that pollution is a burning issue.**

Here again we are expecting from the child that he will do something on his own. If you have 30 students in the class, you might get 30 different titles to the text. There will not be a single title that you may say is wrong. Because if the title is related to the text then all the titles are acceptable. This level is of the level of creativity. Similarly, in second question, each student will come up with the different idea about pollution is a burning issue. There is not a single right answer,

3. **What would happen to our city in next 5 years if steps are not taken to stop air pollution?**
4. **What would happen to raw milk if it is put in iron containers for a long time?**
5. **What will happen if stomach does not produce hydrochloric acid?**

There is higher level of thinking involved in all the questions given at synthesis level. In the first two questions, we asked the students to create something, weather it is a title of the text or a painting. The next three questions are on prediction. The child is thinking about what will happen to our city, if air pollution is not stopped? Or what will happen to milk, if it is put in an iron container? Etc.

6. **Summarize the story including its main idea.**

How this summary is different from comprehension and analysis. It is because you ask the students to write the overall summary including the main idea. So, students are going to create certain things. Now this question is also related to the first two, in which there is creativity of the students.

7. **How can a government solve a problem of narcotics?**
8. **Design an experiment to prove that light rays travel in straight lines?**
9. **How can we solve the problem of indoor and outdoor air pollution?**
10. **How can we remove energy crisis in Pakistan?**

All these questions are related to problem solving, whether they are about suggestions, or making designs etc. all students can never give the same solution to these problems. It is the beauty of synthesis level that every student comes up with his own thinking. Important thing in synthesis level is that students solve problems, predict future happenings and at the same time they create certain things. It has a distinction with analysis level that analysis level says to set apart the things and in synthesis level, things are put together. If you say the students to solve a problem, the students will firstly analyse the problem and then solve it. Do remember, problem solving is there in mathematics too, there is only a single right answer in it while in synthesis you can have more than one right answer.

Word prompts used in synthesis level:

- **Predict**
- **Construct**
- **How can we improve?**
- **Produce**

- **Invent**
- **Imagine**
- **Create**
  - **What would happen if…?**
  - **Design**
  - **Can you devise...?**
  - **Synthesize**
  - **How can we solve?**

Evaluation level:

Again, here are certain questions; you are going to identify common things in these questions:

1. **Which Prime Minister of Pakistan was most successful? Why?**
2. **Discuss that we are not good citizens?**
3. **Do you agree that more finances would help to raise the literacy rate in Pakistan?**
4. **Prove that smoking is harmful?**
5. **Discuss that pollution is individual, national as well as global issue?**

We need to teach our students how to argue? In first question, the student who has more logical answer and can argue on it with others is the best one. If they do not develop the habit to argue, then their higher order thinking skill will not be developed.in second question, we say to the students that it is not a conclusion; it is an argument that we are not good citizens and students have to discuss it. It is not a proven thing; it is different from analysis level. In analysis we give conclusion and then students have to analyse that conclusion. But evaluation level is different; here is an opinion on which you are going to generate a discussion on opinions or on the basis of arguments. There are opinions in the rest of the questions as well and we expect the students to discuss them and generate arguments.

Word prompts used in evaluation level:

- **Judge**
- **Verify**
- **Give your opinion…?**
- **Do you agree**

- **Assess**
  - **Would it be better...?**
  - **Conclude**
  - **Argue**
  - **Evaluate**

Lesson No.11

AFFECTIVE AND PSYCHOMOTOR DOMAIN

Objectives:
By the end of the lesson, you will have:

- Revised Bloom's taxonomy of Cognitive Domain
- Reflected upon Simpson's taxonomy of Psychomotor Domain
- Reflected upon 5 levels of Krathwohl and Bloom's taxonomy of Affected Domain.
- Reflected upon the use of taxonomies as a planning tool.

Outline:

- Bloom's Taxonomy
- Psychomotor Domain
- Hierarchical levels of Simpson's psychomotor domain
    - Perception
    - Set
    - Guided Response
    - Mechanism
    - Complex overt response
    - Adaptation
    - Origination
- Affective Domain
- Hierarchical levels of Bloom's and Krathwohl's taxonomy of affective domain
    - Receiving
    - Responding
    - Valuing
    - Organization
    - Characterization
- Using taxonomies as planning tools
    - Taxonomies may be used to:

- **Formulate and sequence objectives**
    - **Develop classroom questions and activities**
    - **Constructing evaluating material**
    - **Taxonomies provide a cognitive structure**

Bloom's taxonomy:

There are 6 levels of Bloom's taxonomy of cognitive domain. Knowledge is the first level, then comprehension, and then application. These three levels are categorized as lower level of learning. The next three levels, i.e. analysis, synthesis and evaluation are categorized as the higher level of learning. Bloom's taxonomy is still teaching to the students but there are many adaptations of it. One of these is: the three levels, which are knowledge, comprehension and application, are in hierarchy but the other levels: analysis, synthesis and evaluation are not hierarchical. It is difficult to say which level is higher than the other. So, in a new adaptation, these three levels are not placed at hierarchy but said that these are the higher order thinking skills.

What we do in schools, we never focus on the higher level of learning. There are few teachers who take their students to the level of higher-level thinking. Mostly, what happens in schools is that we are asked to memorize things. In mathematics, we are asked to apply learnt formulas and solve problems. Analysis, synthesis and evaluation are never taken into consideration. We teachers maximum want to make our tasks easier, so if all students will right the same answer, copy checking will be easy for us. This is a major reason why teachers do not allow the students to work on the higher-level learning skills. But being a good teacher, my focus must be on students learning and not on the easiness of us. We must take the students towards their intellectual growth.

Intellectual growth cannot take place unless we do not provide opportunities to our students to think at high level.

Psychomotor Domain

Psychomotor domain is the domain where your body movements are involved. There is learning also, if we are drawing a painting or writing something, our muscles are involved in it. Some students are very good at writing but others are not, because we do not provide opportunities to them so that they can learn in this domain.

Hierarchical levels of Simpson's Psychomotor Domain:

1. **Perception**
2. **Set**
3. **Guided Response**

4. **Mechanism**
5. **Complex overt Response**
6. **Adaptation**
7. **Origination**

1. **Perception:**

Perception means attending to a stimulus. There is something happening in your surroundings, and you are noticing that stimulus. E.g. if you are listening, it means that you are actually attending to that stimulus. This is a very theoretical level because a child is not applying knowledge. Simpson identified this level because a child first sees and then starts his body movement. E.g. if I want to learn to drive a car, I will notice someone else driving, or I will ask someone how to drive? I will actually attend to that stimulus by listening.

2. **Set:**

Set is a readiness for action. You show willingness to do a particular task. A child is understanding and comprehending and also trying to demonstrate it in some way. E.g. in a house, if there are people who are interested in studying, a child will notice them. If his father is reading newspaper, he will notice him (Perception stage). He will try to imitate, although he could not read the newspaper but he is trying to read. There is a level in between perception and imitation that he takes the book or newspaper in his hands. There is no action at this level but the readiness to do an action.
In the first two levels of Simpson's hierarchy, you will notice that there is no physical activity involved. But only the understanding of physical activity.

3. **Guided Response/ Imitation:**

The word 'guided' indicate something, a child is responding in the form of action but this action is not an independent action. This action is a guided action. E.g. when a child starts writing alphabets, he could not write them by himself. Sometimes a teacher had to hold a child's hand to teach him how to write alphabets in the beginning. Unless you do not provide a child with guided response, he could not work independently. So, this is a guided response where a child imitates, tries to perform an action, may be in a very new way.

4. **Mechanism:**

There are different mechanics to do different things. Mechanism indicates that a child is independent to do a task by following its mechanics. A child may not be able to perform a task independently unless we are not providing that particular opportunity to him.

5. **Complex overt response:**

   Word 'complex' shows that here the child can do many things independently. In mechanism, a child is independent to do a certain task by following its mechanics, but in complex response, a child can work independently. He will work very smoothly and swiftly to perform a particular task. E.g. a child can write alphabets by following its mechanics independently, but in complex response, a child must be able to write alphabets in joining writing very speedily and smoothly. Small children write words in joining writing very slowly, because there is no complex response. To take a child to complex response, we need to provide them with practicing. If we do not provide them with practice, they can never reach the complex response. As a result, children may keep growing in age but they are unable to write quickly.

6. **Adaptation:**

   Adaptation comes from the word 'Adapt' which means to set yourself in the given situation. Altering motor activities to meet demands of problematic situations.

7. **Origination:**

   Origination means something very original. This is the level where a child can originate things on his own. He can create many things. If he is able to write at mechanics level. Then he is able to write joining writing in complex response. He can make changes in what he writes at the adaptation level. And now here in origination level, e.g. if he knows calligraphy, he can create new style of calligraphy. This is the highest level of Simpson's hierarchy.

"Affective Domain"

Hierarchy of affective domain was developed by Bloom and Krathwohl in 1964. Affective domain is about developing certain attitudes and dispositions. They both identified 5 levels that are important in the learning of affective domain.

Hierarchical levels of Bloom's and Krathwohl's taxonomy:

1. **Receiving**
2. **Responding**
3. **Valuing**
4. **Organization**
5. **Characterization**

1. Receiving:

Being aware of or sensitive to the existence of certain ideas, material or phenomena and being willing to tolerate them. E.g. a teacher told the students about balance diet and that they should avoid junk food. It means that you have received this information from your teacher. So, at this level you do not show anything rather you just receive that information.

1. Responding:

When the teacher is telling you that you must take balanced diet, you need to develop a healthy life style.

So, what you will discuss with the teacher that why it is important to have balanced diet? What are its benefits? Etc. will show that you have not only received the information rather you are responding to that information through your discussion or questioning.

2. Valuing:

Valuing means that the disposition or learning you are talking about; you must value that disposition. You must value by showing certain action. E.g. if your students in a class are taking lunch. Some students bring home make lunch while others are taking junk foods. So, you need to show them and appreciate those students who are taking home made lunch. It means that you are practically applying and demonstrating that thing that you value balanced diet and not the junk food.

3. Organization:

This is an advanced level. E.g. we know that honesty is the best policy. First, we listen from someone that honesty is a good thing, we discuss it with others as well. If we find a person who is honest, we will appreciate him a lot. But now in organization level, you need to develop honesty in your own. You try to be very honest and try to show honesty in your behaviour also. Similarly, as we talk about balanced diet, if a teacher is appreciating students on balanced diet then it means that he values healthy food. But if he himself starts avoiding junk food and start taking healthy food then he has organized himself and now he will prefer eating healthy food instead of junk food.

4. Characterization:

Characterization is different from organization. In organization, you start showing that behaviour but that is not a consistent behaviour. Characterization means that this behaviour becomes the part of your life. You are recognized by this character. This is the highest level of Bloom's taxonomy of affective domain.

All these taxonomies are the learning tools. We all are planners. When we talk about elements of planning, there is a selection of objectives, selection of activities, selection of resources etc. All these selections depend upon your knowledge of these taxonomies.

"Using taxonomies as planning tools"

Taxonomy may be used to:

- **Formulate and sequence objectives:** When you are deciding your lesson objectives, you need to decide that which objective needs to be set first and which objective needs to set next. E.g. if I want the students to be at synthesis level, I must take students to the initial level first and then to take them to the synthesis level. **Sequencing** is also important. We must know that we have to take the students stage by stage in learning. So, we must know the taxonomies to create that sequence in learning.
- **Develop classroom questions and activities:** we take many **questions** into consideration while studying about taxonomy of cognitive domain, but if we do not know about the taxonomies then maybe we will be asking knowledge level questions in the class very much. But if we have knowledge of these taxonomies then we will try to ask higher level questions in the class. **Activities** must also be planned according to the taxonomies or according to the objectives set under those taxonomies.
- **Constructing evaluating materials:** how we can assess the students as well as our teaching. We need evaluation instruments to assess students and teaching. Evaluation instruments will always be developed when we have knowledge about these taxonomies. E.g. if I want to evaluate the students in their sketching then I must know the taxonomies, if I have decided to assess the students at mechanism level, then I must be having a different check list to assess them. But if I want to assess them at origination level, then my check list will be totally different. So, if I do not know about the taxonomies, then I will assess them as weather they have sketched something or not? Taxonomies are important to learn because we will know the level of students learning.

"Taxonomies may be used to decide what to teach, how to teach and evaluate teaching"

Marzano, Pickering and Pollock (2001)

"Research shows that learning does not take place if presented in isolated items"
Hohn (1995)

- **Taxonomies provide a cognitive structure.**

  Here are two important things mentioned that learning cannot take place in isolation and taxonomies give a cognitive structure.

  There are some students who are studying grade level 6 but still they do not know the basic mathematics, and now they are learning algebra. So, when we are trying to teach them algebra, we do not identify the gaps. We try to give them a new learning. Unless they do not learn their missing knowledge, we cannot teach them new things. We must know assess them on their missing knowledge but we must try to identify the diagnostic factors.

  In most of the schools, English learning is done in isolation. Some idioms are taught, some vocabulary or essay writing and other things are said to be memorized. So, as a result, we are unable to write an argumentative essay in our graduation exams. If we have knowledge of different taxonomies of learning, then at least we are going to provide things in integrated way to our students. We can take the students into cognitive structure.

  We cannot teach the students in isolation. We need to teach them in an integrated fashion. These leaning domains see the things in sequence. They can relate things with each other. If being teachers, we do not know about the taxonomies then we are making students learn in bits and parts.

Lesson No.12

PERFORMANCE OBJECTIVES

Objectives:

By the end of the lecture, you will have:

- Differentiated between measurable and non-measurable objectives.
- Identified three necessary elements of performance objectives i.e. performance statement, condition and criterion measure.
- Reflected upon curriculum alignment as a rationale for performance objectives.
- Reflected upon limitations of objectives.

Outline:

- Performance objectives
  - Objectives
- Elements of performance objectives
  - Performance
  - Condition
  - Criterion measure
- Limitations of performance objectives
- Assumptions of performance objectives
- Curriculum alignment
- (Before we look at performance objectives, look at the following objectives and reflect upon
- them if they are clear)
- The learners will draw a right-angle triangle (Not clear).
- The learners will use verbs in sentences (Not clear).
- The learners will write a letter (Clear to some extent).
- The learners will identify differences between Pakistan Constitution 1973 and 1956. (Clear)
- The learners will locate countries on world map (Clear).
- The learners will draw and label human digestive system (Clear).

(According to today's lecture none of the above is clear objectives. You will come to know by the end of the lesson, why?)

"Performance objectives"

Objectives:

Objectives are intent of teaching.

"The purpose of objective is to communicate the exact intent of a lesson."

Performance objectives:

"They are precise statements of what you expect students to do."

Precise statement means an exact statement which tells the teacher, what students will be able to do. Here are three characteristics of performance objectives:

1. **Performance**
2. **Condition**
3. **Criterion measure**

Writing performance objectives:

They have 3 elements:

1. **Performance:** The statement of an observable behaviour, or performance, on the part of the learner. They are stated with action verb.

(Here are two things to be taken into consideration. Firstly, these objectives must be student oriented and secondly, they should be precise. Action words are: write, classify etc. So, whenever we are going to write performance objectives, we need to ensure that we use action word to describe the performance).

2. **Condition:** Condition is a description of the conditions under which learner's performance is to occur. They determine how, when, where and with what of performance.
3. **Criterion measure:** The prescription of a minimally acceptable level of performance or criterion, on the part of the learner.

(Now we are going to compare the objectives discussed at the start of the lesson with those of performance objectives.)

Differences between measurable and non- measurable objectives:

Look at the following objectives and reflect upon them if they are clear:	**Performance objectives:** **'By the end of the lesson':**
The learners will draw a right angle triangle.	The learners will draw a right-angle triangle with a protector meeting ratio 3, 4, 5
The learners will write a letter.	The learners will write a (200- 250) words letter with an appropriate format to a friend independently.
The learners will identify differences between Pakistan Constitution 1973 and 1956.	The learners will identify at least 5 differences between Pakistan Constitution 1973 and 1956 by using the textbook.
The learners will locate countries on world map.	The learners will locate any country on world map when latitude and longitude values are given.
The learners will draw and human digestive system label.	The learners will draw and label accurately at least 5 parts in human digestive system independently.

In all the above performance objectives, there are the three elements present i.e. performance, condition and criterion. Performance objectives are the precise statements of our expectations.

Limitations of performance objectives:

- Objectives have a limited purpose; they are only a means to an end, not an end themselves.
- Teachers can construct technically correct objectives but can fail completely in classroom.

Assumptions of performance objectives:

1. **Learning is change in behaviour.** The second name of performance objectives is behavioural objectives. While writing performance objectives, we have to use an action word that exactly shows the behaviour. If we are seeing learning in behavioural forms then it is not true that learning is change in behaviour. It can be an assumption because it is said to be the limitation of performance objectives.
2. **Learning can be measured.** While writing performance objectives, we focus on the action word because we can exactly measure that the learning has taken place or not? So, we believe

that learning can be measured. E.g. if a child is listening to a very good discussion, but he did not utter even a single word. Its means that we are not measuring the learning. To write performance objectives is necessary, especially when we are going to start teaching. This is not true that if the learning cannot be measured then there is no learning. If someone is reading a book, his learning is not measured, but you need to appreciate him to do such activities. Though being a teacher, I am not able to measure that.

3. **Observed learning outcome is directly linked to the teaching strategy, the content or media used.** Here we assume that whatever a student is learning, actually that all depends upon teacher's teaching. The content that is going to be taught, the resources that are used and the teaching strategy. We totally deny other factors that what is the prior knowledge of the students. What is his background or how many siblings he had? All these things have effect on students' learning.

   While writing performance objectives, we eliminate all these factors and assume that all learning depends upon the teaching strategy, teaching content and the teaching resources.
   So, we started seeing classrooms in isolation.

Curriculum Alignment:

Firstly, we are going to have a look on the foundations of curriculum:

There are four steps in Taylor's model of curriculum:

1. **What is the purpose of the education?**
2. **Which educational experiences will attain the purposes?**
3. **How can these experiences be effectively organized?**
4. **How can we determine when the purposes are met?**

Whenever we are going to write performance objectives, they must be aligned with the curriculum. If your purpose of education is that the students should be empowered citizens. So, the entire objective that you will construct, affective domain will be very important. You will include something from affective domain in your lessons. So, we need to align our performance objectives with the curriculum. Curriculum at different levels; curriculum of the year i.e. short-term goals, and to the broader goals that are school goals. Whenever we talk about curriculum alignment, we need to align our performance objectives on these two levels.
It is important for the broader curriculum to identify educational experiences; similarly, it is also important that what educational objectives will be attained at the end of a lesson. Relevant educational experiences are important. When we are planning a lesson, and we have performance objectives mentioned already, then we have to organize those educational experiences that can fulfil the ultimate goal. You have to provide the students with experiences. E.g. if you want the students to have experience of recording something in the lawn. Then firstly, you will ask them to go in the

lawn and observe. You cannot give them the experience of recording directly, unless they do not observe the things. You will organize the experience in such a way that you will ask them to first observe and then record. There is assessment in the fourth question, that is, have you attained those goals or not? Whatever you want to assess, that must be against your performance objectives. Performance objectives, all the three elements must be present and you should assess your students according to those three elements.

Lesson No.13

LEVELS OF PLANNING

Objectives:

By the end of the lesson, you will have:

- Identified levels of planning.
- Reflected upon the scope of yearly, unit, and lesson planning.
- Determine link between different levels of planning.

Outline:

- Planning
    - Horizontal dimension of planning
    - Vertical dimension of planning
- Planning framework
- Components of planning
    - Detailed implementation
- Instructional vs. curriculum planning
- Link between formal curriculum and classroom

Planning:

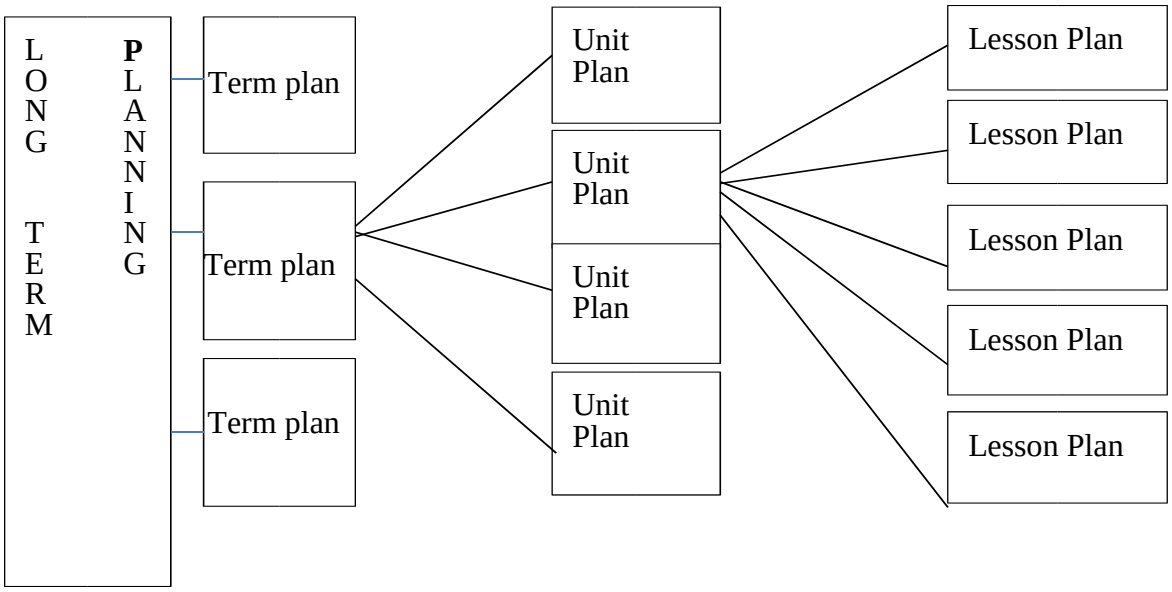
Planning is essentially a nested process with horizontal and vertical dimensions. If a teacher is going to teach in the class without planning a lesson, then he is not a part of process of teaching. As a result, he cannot teach appropriately in the class.

Horizontal dimension of planning:

In horizontal level, planning includes selection of activities, resources, assessment and homework.

Vertical dimension of planning:

In vertical level, it includes link between standards, benchmarks, learning outcomes and instructional objectives.



Planning framework:

Here in the figure, you can see that if we start from school's yearly planning, there is written 'Long term Planning' that is a planning of one year of a school. Teacher is more related to long term planning. The next is 'Term Plan', in some schools there are two terms while others have three terms. So, you have to plan about every term separately. If we take one term plan into consideration, then it will be consisted of all units of the subject. E.g. if you have to teach 10 units of a subject, then you have to make 10-unit plans. Every unit plan will consist of a number of lesson plans. To achieve the learning outcomes of every unit, we have to construct some instructional objectives. This planning framework is very important for the teachers to understand, because teacher is directly involved in this kind of framework. Teacher is a person who is making lesson plan, unit plan and term plan. Only long-term plan is related to the curriculum, the else is the responsibility of a teacher.

Why to write instructional objectives:

Good planning has two components:

- **Holistic vision**
- **Detailed implementation**

Holistic vision comes from curriculum planning while detailed implementation comes from lesson planning. There are standards and benchmarks in curriculum document

e.g. a student will come up to certain standard after 12 years or after one year a student will achieve these benchmarks. Your lesson plan makes visible those benchmarks.

What are the commonalities in instructional and curriculum planning?

Instructional vs. Curriculum Planning:

Instructional planning	Curriculum Planning
Identifying pupil's needs	Identifying societal needs
Writing and sequencing objectives	Writing standards and benchmarks in a sequence
Selecting methods/ strategies	Benchmarks in sequence
Assessment procedures	Assessment
Resources	Resources

- Curriculum planning is done on the basis of needs of the society. There are three foundations of curriculum: sociological, philosophical and psychological. So, your societal needs are identified and on the basis of those needs curriculum is developed. While in instructional planning, the needs are identified but these needs are of the students. Firstly, the teachers identify students' needs and then plan a lesson. Teacher needs to differentiate a lesson in a way that he addresses pupil's needs.

- Benchmarks and standards are written in a sequence in curriculum planning. E.g. there are benchmarks of grade level 8^{th} or 9^{th} or 10^{th} etc. benchmarks and standards are planned according to the grade level of students. While in instructional planning we write objectives. The instructional objectives must be derived from the standards and benchmarks of curriculum. There should be a link between standards, benchmarks and instructional objectives.

- Methods are also identified in instructional planning. We made sequence of those methods or strategies to be used in the class. While in curriculum planning, we made sequence of benchmarks.

- In curriculum planning, assessment is taken into consideration, it is thought, how to assess the students that which standard is achieved and which is not? Or students reached the level of benchmarks or not? Similarly, in class, the teacher identifies the assessment procedures. Firstly, the teacher identifies assessment criteria. Secondly, he decides how to assess. So, in both cases, the decision of assessment is taken.

- Decisions about resources are taken at both levels. In curriculum planning, you take decision at broader level i.e. in twelve years, how many and what resources will be used for a student? But at lesson planning, you decide what resources are needed to acquire a particular objective.

So, planning is definitely a nested process, starting from curriculum to instructional planning. There are number of things which are interlinked and whenever we are going to plan for a single lesson, we need to look at the bigger picture.

(Here is a curriculum document in which there are different competencies of English. These are reading competency, writing competency, listening competency and speaking competency. In this document there are standards till grade level 12th. I have picked only one standard from them for your understanding. Then one benchmark from grade level 1 & 2. And then learning outcomes from the same grade.)

Link between formal curriculum and classroom:

English

Competency: Reading & thinking skill

Standard:

To discover and understand a variety of text types through tasks which require multiple reading and thinking strategies for comprehension, fluency and enjoyment.

If being teacher, I could not understand this standard, and then ultimately, my lesson plan would suffer. So, if we say that a child is given with different texts of reading, then he could differentiate them, understand and discover them as different reading texts. E.g. if you are reading a newspaper, there is reporting in it, news or articles. It has a different text type then of an essay. Or you are reading a narrative story; its text type would be different from that of a newspaper. So, according to the curriculum document of grade level 12th, the first thing is that **students should be able to discover and understand different text types.**

Multiple reading and thinking strategy mean that students should know to comprehend a complex task to a certain level. Or if there is a simple text, a student may read it and scan that what was important in the text. So, a student must not only explore the multiple text types and understand them but he should develop some reading strategies in himself. The strategies that are related to comprehension and **fluency**. There are some students who are very fluent readers, but others are not. So, we have to observe students that how they make fluency in their reading through different ways. There is another important thing i.e. **enjoyment.** How students can enjoy the reading and thinking. The standard is not only to know reading or you can think deeply but you can read to the certain level where you can put questions, comprehend it, be fluent in reading and also enjoy it thoroughly.

Benchmarks for grade level 1 & 2:

Students recognize words and sentences as meaningful units of expression and paragraphs as graphical units of expression.

The important thing in this benchmark is that the student is able to know the difference between a sentence and a paragraph. He must know that if he is going to say one thing, then it must be used in a sentence. And if he wants to say more than one, then he should know that this thing will go in a paragraph. So, paragraph is an expression of more than one thing that is in a same context.

Learning outcomes:

Students should be able to:

1. **Predict story by looking at picture (s) in texts.**
2. **Locate specific factual information to answer in a word or two or in simple sentences.**
3. **Guess what follows in the story 4. Follow sequence in a simple procedure.**
5. **Express likes/ dislikes about the story.**
6. **Express understanding of story through simple role play.**

(Now I have taken the first learning outcome and make possible instructional objectives. These objectives must be attained after the lesson.)

1. Predict story by looking at picture(s) in texts.

Instructional objectives:

By the end of the lesson, the students will be able to:

- **Describe first four pictures of Goldilocks' story with almost 70% accuracy by using the picture cues.**
- **Read the sentences aloud with correct pronunciation of the words, with teacher's assistance.**

The next day when teacher continues with the same lesson, his instructional objectives would be: By the end of the lesson, the students will be able to:

- **Answer simple question like was Goldilocks' a good girl? Whatever she did was that a good thing?**

When teacher will ask such questions in the class, then definitely the students' analysis skill will be developed and refined. All the above objectives have the three elements of performance objectives i.e. performance, condition and criterion measure.

Summary:

Planning is a nested process. So, if we talk about grade level 1 to grade level 12, these are the twelve stairs and a link should be maintained between them. Otherwise, if we are not able to maintain this link, then its ultimate would be that teachers and students would be confused. And after doing graduation even, our children will not be able to read, think or write accurately. So, teachers' responsibility starts from the benchmarks. If you are a mathematics teacher, you need to have a curriculum document of mathematics. There are learning outcomes for unit plans given in it. Observe the learning outcomes, and on the basis of these outcomes, try to identify objectives for all possible lesson plans. When objectives are identified, then you start horizontal planning. In horizontal planning, you have to decide which activities will be organized for the students? What teaching methods will be used? What resources should be used? You have to identify the focusing events i.e. how you will make the students attentive to you? Then you have to identify the procedure of teaching in the class step by step. If you do not write all the above-mentioned things in your lesson plan, then it is not a detailed lesson plan. The next thing in horizontal planning is that how will you assess the students in the class? So, my planning is actually interlinked, starting from objectives and going to resources. We also try to know the planning framework and especially the role of teacher in it. Planning has two very important dimensions: one is holistic dimension and the other one is detailed implementation. So, it is said that a teacher is the one who operationalizes the curriculum. Curriculum document is pre planned but the teacher gives life to this curriculum document. Teachers give it life when they are planning and then implementing them in the class. So, teachers' role is very important. They have to maintain the standards of curriculum.

Lesson No.14

FACTORS INFLUENCING PLANNING

Objectives:
By the end of the lesson, you will have:

- Identified factors affecting planning.
- These factors include Students, Time, School, Teachers and resources.
- Curriculum guides
- Identified instructional planning procedures like identifying:
  - Pupil's entry skills
  - Planning learning activities

Outline:

- Factors affecting planning
  - Students' considerations
  - Time considerations
  - School considerations
  - Teachers considerations
  - Resource consideration
  - Motivation consideration
- Textbooks and curriculum guide
- Characteristics of good textbooks
- Pre-planning
- Deciding on content and processes
- Identifying entry skills
  - Identification of activities

'Factors which influence planning'

Planning equation:

"Less planning leads to less learning"

Walsh (1992)

Planning = Content + Method

This simple equation directly influences learning. If we ignore this equation then ultimately, we are going to the way where there is no learning. When a teacher is going to teach a topic for the first time, he needs to have a detailed and thorough plan. If a teacher had to teach a topic for the second or third time, he doesn't need to see the plan again and again. There is a common assumption that teachers don't need planning, these all are a theoretical point of views and there is no practical importance of them. In fact, this assumption is very wrong. If a teacher is experienced, he still needs planning. The difference is when you are a new teacher; you need to make very detailed plans. When you become an experienced teacher, then actually you don't need to make detailed lesson plans, but still you need to plan your lessons.

What are the considerations of the teachers when they are planning for instruction? (Here is the brief summary of the interviews from the teachers**)**

Interview: 1 (Slomiat - Teacher):

When I am going to teach the students, I first try to know their prior knowledge. If the students know how to write the alphabets 'A' and 'B', then I will focus on teaching them the alphabets 'C' and 'D'. I had to check the foundation of the students first, and then I plan my lesson according to their prior foundations.

Interview: 2 (Sehreen Rashid - Teacher)

When we are going to teach, we will plan the entire things first i.e. learning environment, strength and weaknesses of the students, curriculum, allocated time, learning activities, our content knowledge etc. we will plan according to all these factors. Our plan is actually based on a process.
Whenever we talk about considerations, we do not consider them in isolation. One consideration is affecting the other. There is a link in between them. So, they are not isolated considerations.
So, there are certain factors which influence planning.

- **Students' consideration:**

Being a teacher, you need to know your students. You need to know their level of motivation. Does the class work as a group or not? These are all considerations that are important on behalf of students. Most of the times we see that when teachers talk about students' considerations, they mostly focus on the learning styles of the students. Secondly, they focus on the prior knowledge of

the students. Teachers do not think more than these two factors but still there are different factors that need to be taken into consideration while planning a lesson.

Motivation:

A teacher needs to know the motivation level of the students as they need to know their entry level skills. When you are going to teach in a class with lesson planning, you are not only to cover the content. You have to teach them some processes and you need to plan some activities as well. So, if you do not know the motivational level of the students then you will not be able to know plan appropriate learning activities for them.

- **Content and process considerations:**

While yearly planning, you have to see the curriculum framework. Ministry of education has planned curriculum document and in it there are standards till grade level 12, but if you are going to teach to grade 5, you refer to that curriculum document and decide what content you are going to teach to the students. Similarly, you have to see the overall yearly plan for unit planning and lesson planning. It is also important to know about the processes. If I am going to teach the students addition in mathematics, then I must see what thinking processes are involved in it. E.g. if I am teaching them essay writing, then I have to see what processes are also involved while the students are learning to write an essay.

- **Time considerations:**

We have limited time to teach in a class, a 40- or 45-minutes period. We have to present the content in such a way that if it is a necessary content, how we can complete it in a given time frame.

- **School considerations:**

Some parents demand that their children must also be engaged in co-curricular activities as well as learning the content. But schools' policy is to cover the content as much as possible. They are unable to provide the students such environment where actually they are participating in co-curricular activities. So, the schools want to come up to the demands of the parents but they do not want to compromise on their policies. They must plan it integrated that students can have the activities as well as they can learn the content. E.g. essay writing competitions, which is very much co-curricular activity. But at the same time students are learning certain content through that. For planning such kind of activities, teachers need to consider what are school policies?

- **Resource considerations:**

If a teacher plans to take the students for field trips, then he needs to consider schools' resources. He needs to know, is there human resource in the school? Is there physical resource present in the

school? We have the facility or not? We have the transport or not? We have the drivers or not? How many teachers can go with the students? So, she must consider the overall resources.

- **Teachers' considerations:**

Whenever I am going to plan, whether it is a lesson plan, unit plan or yearly plan. I must know the content selected to teach. If I myself do not know the content properly, then how will I be able to teach that content to my students? If I do not know, then I must seek help from my colleagues. **Content** knowledge is a very important competency of a teacher. I need to be very truthful to myself. **Processes** are also very important in teachers' considerations. E.g. imagination, it is a thinking process. We want to develop the thinking skill of imagination in our students, so that they learn how to imagine? A teacher must observe himself that how much imagination thinking exists in him.

- **Textbooks and curriculum guide:**

Textbooks are the ultimate resource for most of the children. And they are the ultimate resource for most of the teachers as well. Curriculum is a very broad term; it includes content, syllabus, activities, assessments and textbooks also. Curriculum guides are planned by Ministry of education in Pakistan. Curriculum guides actually give us a guide line about what to be taught in different grade levels. They do not only focus on the content but also on the processes that must be taught to the students. So, content and processes are there in our curriculum guides.
Whenever I am planning, I must use that curriculum document as a referred document.

Curriculum documents are not available in all schools. But all schools have textbooks. Principally speaking, textbooks are written on curriculum guidelines. So we may say that ideal textbooks are actually mirror image of curriculum guide lines. There are some characteristics of good textbooks:

Good textbooks:

- Provide a structured sequence of lessons.
- To achieve students learning outcomes for different units of study.
- Includes supplementary reading material.
- Have assessment strategies as well
- Have mentioned some activities also.

So, you need to decide which textbooks need to be used for a particular instruction. And how will you align them with the curriculum. These are different considerations which we need to take into account whenever we are planning for our instruction.

Preplanning (Planning before unit and lesson planning):

The yearly plans are already made according to the curriculum guidelines. Curriculum guidelines consist of learning outcomes but not the resources and other activities.
We have to plan all these at different levels i.e. yearly plans, unit plans and lesson plans. Every teacher is supposed to plan unit and lessons, so the stage before planning unit and lesson is called pre-planning stage.
What teachers had to decide at the pre-planning stage is as follows:

- Which content to be covered?
- Which processes to be selected?
- Do students need pre-course instruction to acquire prerequisites?
- Which learning activities seem relevant to goals, content and students' interests?

Deciding on content and processes:

We usually say that content must be taught and we try to get memorized that content to the students. It is very much rote learning. Content is important but processes are also very important. Processes like imagining, problem solving, analysing, organizing and communicating is actually critical to almost every subject and topic you teach. You must tell the students about the thought processes they are learning. You must communicate your expectations to the students and give them such tasks where actually they experience these processes. So, processes are important, whenever we are teaching our students, we need to focus not only on the content rather on processes also. You cannot isolate process from content. E.g. a child who is very good in problem solving must also be very good in content also.

Identifying entry skills:

We have planned our lesson on writing skills and we are going to teach them how to write an argumentative essay. I need to know if my students know how to write an essay or not? For this purpose, I will give a task to the students to write an essay. I will judge them accordingly that either the students are able to give their main thesis statement? Are they able to write the topic sentence correctly? Can they write proper introduction or not? Can they write conclusion? What is their choice of vocabulary? What are their ideas and sentence structure? I will make check list of all these things to check the entry level skills of the students. We will do diagnostic assessment to check the

entry level skills of the students. So, for this purpose, I need to be very clear that what I am going to assess.

When we are assessing the students for entry level skills, we must not give them marks rather we have to diagnose their skills. We are not supposed to scold our students on the basis of that test. The goal of that diagnostic test is that how we can support our students in developing their skills. We have to identify the weaknesses of the students and give them remedial classes.

Identification of activities:

For the identification of resources, we need to plan activities. If we need some resources in lesson 4th or 5th, so we can provide the administration with the list of resources at the beginning, so that they can manage them until we reach to lesson 4th. So, it is important to know and think about activities first.

Lesson No.15

UNIT PLANNING

Outline:

- Unit plan
- Importance of unit plan
- Components of a unit plan
  - Subject/topic
  - Rationale
  - Instructional objectives
  - Content (Facts, Concepts and generalizations)
  - Process
  - Resources
  - Learning activities
  - Evaluation

"Unit Planning"

Unit planning is part of our planning framework. Most of the times, teachers divide their overall content into some manageable instructional units. E.g. a teacher is going to teach mathematics to grade level 6, there will be a yearly plan for grade 6 in which there is algebra, fraction, geometry, percentage etc. concepts are given. Teachers divide the whole content into blocks of the same type i.e. fraction in one block and percentages in the other. The planning of fraction would be different from that of percentages. So, these blocks are called unit plans. Whenever we are dividing our whole instruction into the small units, we need to know how to integrate them altogether.

Importance of unit planning:

"Unit planning is the most important as well as the most time-consuming level of planning for each teacher"

Walsh (1992)

Unit planning is important because we need to know the reasons for dividing the whole thing into components. Most of the times, teachers' complaint for shortage of time. This problem can be solved by making the detailed unit plans. You can observe all the topics given in the yearly plan, and then identify the most important topics and the overlapping topics. You can omit the overlapping

topics whose level of difficulty is the same as taught previously. So, actually unit planning helps you to go through whole yearly plans.

Components of a unit plan:

1. **Subject/ topic**

   Unit subject is the title of the whole unit. E.g. in science, Human system is the unit; its chapters would be digestive system, circulatory system, nervous system etc.

2. **Rationale**

   Teacher has to decide which content have to be taught and which must be omitted. Whenever you select a topic to teach, there are reasons of it. So, you need to give reasons under the heading of rationale. E.g. a rationale is given in the book named 'Teaching strategies' and that is:

   "Understanding a scientific processes and principal is important for every student. Helping students become interested in science at an early age will increase their motivation to want more science as they get older. Additionally, doing science at an early age is an excellent introduction to higher thinking processes as observing, classifying, making inferences and withholding judgement until sufficient data has been gathered. Thus, these units on water besides having many informative interesting activities will help prepare students mental for enjoying the observation of the world around them."

3. **Instructional objectives**

   Whenever you are planning a unit, you need to identify the major instructional objectives.

   Though you are not supposed to give rationale over here.

4. **Content (Facts, concepts and generalizations)**

   When you give the title of the topic, you have to identify the content also. Make sure while writing the content that you isolate facts, concepts and generalizations clearly. You have to tell exactly that the unit consists of these facts, concepts and generalizations.

5. **Processes**

   You have to identify the processes which the students are going to learn from this unit.

6. **Resources**

   You have to identify the resources which are to be used while teaching a lesson to the students. You have to make a list of the resources and submit that to school administration so that they can manage them properly.

7. **Learning activities**

   Learning activities are different from teaching activities. Teaching activities are there to teach content to the students. While learning activities are there so that pupils experience

processes. If you do not identify the learning activities, then students may not be able to learn the identified processes. E.g. experimentation, when students perform experiments then actually, they go through the process. That is a learning activity for them. If teacher would demonstrate the experiment then it would be a teaching activity. Learning activities are those where students are actively involved. And these activities are important because we do not teach processes to our students unless we do not include learning activities in our lessons.

8. **Evaluation**

   You have to identify the criteria for evaluation. What to evaluate and how to evaluate should be identified in unit planning.

(Here is an example of a unit plan where all the components are described. Observe this lesson plan carefully for your better understanding.)

Unit Subject:

Unit of food (Topic)

Sub-topics: (Content)

i. Food as a right of every human being
ii. Concept of food and diet
iii. Variety of food
iv. Types of food including whole food, organic food, and natural food.
v. Groups of food which includes carbohydrates, proteins, fat, water, fibre, vitamins and minerals.
vi. Balanced diet

- **Planning interdisciplinary thematic unit**
- Such planning requires conscious effort to apply knowledge, principles and values to science and English subjects simultaneously. (**Rationale**)

Processes:

Imagination, analysing, recording, interviewing, questioning and then making generalizations and problem solving also.

Learning activities:

1. Concept analysis model will be followed to teach students the concept of food.
2. Direct instruction will be used to teach students how to make custard, steam vegetables, omelette and French fries.

3. Students will be asked to investigate food traditions in their families. They will interview their family members and write a report on that and share it with the class.

Unit – Project learning:

Here the teacher divides the students into groups, and ask them to write their names and selected items on the board so that all the students may know it.

1. Arrange a food carnival.
2. Prepare an estimate of the food budget.
3. Identify the place where you will hold carnival (work with your class fellows to decide on it)
4. Divide responsibilities Design and print a brochure to market your food stalls.
5. Prepare a report based on your experience and visitor's impressions.
6. Present the report to the whole class.
7. Upload your reports on school website.

So, this one activity of food carnival is very useful activity in terms of giving opportunity to the students to experience a range of processes. When we are planning our unit, learning activities hold a very prominent position.

(Teacher has also given alternatives that if a food carnival is not possible in school then what activities should be done)

Projects:

1. Growing organic food
2. Making a classroom cookbook
3. Making a cookbook for diabetics
4. Making a cookbook for high cholesterol patients
5. Making cookbooks for high blood pressure patients

Food – Inquiry:

Asking students to inquire dietary habits of 5-8 years old children, 9-15 years old children, 16-25 years old people and 55-70 years old people. Try to investigate the relationship between their dietary habits and their weight.

Discussion:

So, whenever we are planning a unit, we really need to select these learning activities very carefully. And we need to make a match between processes and learning activities. What do we teachers do is that we focus on the completion of the syllabus. This is a wrong assumption because when we plan a lesson, we need to decide on the content which we think is important to teach. And also, we have to give a rationale on the content selected.

We do not know that what different processes according to different subjects are. We are not supposed to teach content to the students. Content may be same for all the subjects; subjects may differ according to their processes. So, unit planning is very challenging and time consuming but the most important thing is that good unit planning is a guarantee to effective instruction and effective learning.

We have to identify the facts, concepts and generalizations while planning a unit. In unit plan while writing content, a teacher writes some questions too. It is useful because you can design the learning activities easily.

In evaluation, we discuss that there are two things; criteria and method. So, when you are going to assess the processes, you need to adopt alternate methods. E.g. if you want to check whether the students can communicate well or not? You cannot assess them through paper pencil test. Processes can never be assessed through paper and pencil tests. You have to create a check list for assessing communication skills. If you want to assess the students in report writing, give them the task to write a report then analyse it. Processes are usually assessed through analysis method or through observation.

(Here are brief interviews of teachers on their opinion of unit planning)

Interview: 1

Firstly, I consider lesson planning very important and I usually focus on that. But I was failed to develop co-ordination with the class. Then I discuss it with the mentor, he said that you must plan units before lessons. Because that is a root towards lesson planning and you can never develop coordination in the class. It is a bit time consuming activity but it is very important and root towards success. It really helps teachers in adding certain things and in omitting certain things.

Interview: 2

We must plan unit before lesson. All teachers must emphasize on unit planning because if we take both lesson and unit side by side, we can teach the lesson well organized. We can provide useful guidance to the students.

So, teachers most of the times say that it is a useful activity as discussed in the above interviews. You can break the content into blocks but can't integrate it. There must be a link between the interdisciplinary thematic units. When we plan units integrated, we have to assess them integrated as well.

Lesson No.16

LESSON PLAN

Outline:

- Lesson plan
- Components of a lesson plan -Subject
  - Instructional objectives
  - Rationale
  - Content and process
  - Instructional procedures
- Tyler's rationale
- Bloom's taxonomy
- Gagne's plan
- Why to plan a lesson
- Templates of a lesson plan
- Unit plan vs. lesson plan

Before we start with lesson planning, here is a task for the students that observe the lesson plan given below and identify, if this is a lesson plan or not?

Task 1:

Read the following and decide if it is a lesson plan?

Tuesday: 14th February, 2011.

1. Review spelling words (5 min)
2. Silent reading and underlining difficult words in chapter 15 (10 min)
3. Pronouncing difficult words (5 min)
4. Discussing meaning of difficult words (10 min)
5. Homework (5 min)

In fact, this is not a lesson plan. You might have seen lesson plans in such form. If seen, this may be a plan that in 5 minutes what to do and in next 10 minutes what will be done in class. This lesson plan can be an activity schedule, because activity schedule is something which indicates division of time.

Lesson plan:

1. **Lesson is a piece of a unit NOT a block of time.** If you have decided to teach a unit of light to the students, definitely a whole unit of light cannot be taught in one lesson. You need to divide the whole unit in certain pieces. Maybe you decide to divide the whole unit of light into 10 pieces, so each piece would require a plan. That plan is called lesson plan. Lesson plan is part of the unit plan while activity schedule is part of the block timetable.

2. **A lesson plan is defined as**

   "a systematic design for the development, implementation and evaluation of instruction"

   (Chatel 2002)

   It is basically "a rehearsal for delivering actual instruction"

   (Causton- Theohari's et al 2008)

   So, a lesson plan is a very important document because it tells you what you are going to do in real classroom situation.

Components of a lesson plan:

1. **Subject:**

   Lesson plan starts with the subject. Lesson plan is part of unit plan, so we need to know what the unit title or unit topic is. So that we are able to identify the lesson title. E.g. if we are teaching the unit of light, there can be a lesson, named 'colours' or 'transparent or translucent objects' etc. so the name of the unit must be mentioned in lesson plan.

2. **Instructional objectives:**

   You need to mention the instructional objectives that what the students will achieve after reading the lesson.

3. **Rationale:**

   Rationale means reasons that what the reason behind those specific instructional objectives is? **Content and process:**

   It is very important that when you are identifying the content to teach to the students, you need to identify what skills they are going to learn.

4. **Instructional procedures:**

   While planning a lesson, you divide instructional procedures in 5 different

i- Focusing event

ii- Teaching procedures

iii- Student activities and participation

iv- Formative Check

v- Closure

(Parallel resources)

Lesson planning may be based on different models. Tyler's model is one of the very famous models of curriculum development. As we know, lesson planning is a short-term planning. It is part of curriculum planning. So, it can also be based on Tyler's rationale.

Tyler's rationale:

1. What educational purposes should the school seek to attain? **(Defining appropriate learning objectives).**

2. How can learning experiences be selected which are likely to be useful in attaining these objectives? **(Introducing useful learning experiences).**

3. How can learning experiences be organized for effective instruction? **(Organizing experiences to maximize their effect).**

4. How can the effectiveness of learning experiences be evaluated? **(Evaluating the process and revising the areas that were not effective). (Tyler 1969; John 2006, 484)**

If we plan a lesson according to Tyler's model, then the important things in it would be:

Lesson planning:

"A lesson plan defines objective, plans materials, resources and activities are mobilized for the efficient attainment of the selected objectives; and finally, evaluation criteria is also identified.**"**
You actually identify objectives first, and then select activities for attaining them. Select material and resources and go further to decide the criteria on which objectives need to be evaluated. Interestingly, criteria remain the same. If we are going to evaluate the objectives, then naturally, objectives are evaluated against objectives. Objectives actually provide you the criteria for evaluating the lesson.

Bloom's Taxonomy:

Six levels of taxonomy are important in his taxonomy. If you are planning your lesson on these six levels then definitely, they will be helpful in identifying your objectives. The important thing in Tyler's model and bloom's taxonomy is that you observe the ultimate behaviours. At the end of the lesson, the students are able to show the particular behaviour or not? In both the models, you identify objectives and then plan activities. And eventually you assess them on objectives.

Gagne's Plan:

Gagne expand the steps of introducing and organizing experience to include a sequence of nine particular "Instructional events" – Events that begin with "gaining attention" and conclude with "enhancing retention and transfer"

Gagne introduces nine different instructional events and nine different internal processes.

	Internal process	Instructional event
1.	Reception	Gaining attention
2.	Expectancy	Informing learners of the objectives
3.	Retrieval to working memory	Stimulating or recalling prior learning
4.	Selective perception	Presenting the stimulus
5.	Semantic encoding	Providing "Learning guidance"
6.	Responding	Eliciting performance
7.	Reinforcement	Providing feedback
8.	Retrieval and reinforcement	Assessing performance
9.	Retrieval and generalization	Enhancing retention and transfer

1. A teacher should gain attention of the students in the class. If a teacher is unable to gain children's attention, then definitely he will not be able to teach certain things. We need to see what is the internal process that is involved when we are to gain attention of the students i.e. **Reception.** A child starts receiving. If you do not gain attention of the students then the internal process of reception will not start in them.

2. It is not about telling exact objectives, but it is about communicating expectations. In this internal process, students come to know what the teacher is expecting from them.

3. What happens when actually teachers stimulate prior learning of children? Teachers ask questions to judge their prior learning. Its internal process is "retrieval to working memory". Whatever we learn it becomes part of our long-term memory. We are going to learn a new thing, maybe there are number of things that are already in our mind but they are not part of our working memory. If the teachers do not try to bring the prior knowledge into working memory then there will not be a connection in new learning.

4. It is important to present the stimulus. In class, learning new thing will be a stimulus. You must attract the students towards new learning by good presentation. When you present, children cannot learn it all at once, there will be a selective perception.

   When teacher provides guidance to the students, then there is semantic encoding. When your present stimulus, there is selective perception. But when you guide children, there is semantic encoding. Children understand meaning and their mind starts processing the information.

5. Teachers have to identify the methods to monitor the progress of the students. When you ask a question, you expect a response from the child. Here the internal process is to respond. If we are not going to elicit performance, then definitely children will not respond.

6. Giving feedback is equally important. You need to provide feedback so that child improves his/her performance. Its internal process is of reinforcement. When you provide feedback, the students reinforce their learning in mind. Feedback is important to reinforce pupils' learning.

7. Assessment of the students is important so that there will be reinforcement of learning in them. As feedback is important to reinforce pupils' learning, similarly, assessment is also important for reinforcement of pupils' learning. At the same time, assessment serves the purpose of retrieving.

8. The summary you give at the end of the lesson. May be it is of 2 or 3 minutes, and it may not be important for a teacher. But they are very important for the children. Because these minutes actually again help child to transfer information from the working memory to long term memory.

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So, we can conclude that lesson plan based on Gagne's model includes these nine essential instructional events. Because it is assumed that these instructional events activate the internal processes.

Why to plan a lesson?

Templates are designed with the intention of "scaffold[ing] the thinking, skills and attitudes of pre-service (student) teachers. (2008, 385).

A lesson plan has a provisional purpose:

- **It helps to develop thinking skills that will be useful in practical teaching preparation.** Lesson planning is essentially a reflective process. Reflective process because you keep in mind that what students have learnt and what they are going to learn. You keep in mind the strengths and weaknesses of the students and then plan a lesson. Identification of objectives is a very difficult task. It really requires lot of thinking and time. Lesson planning is actually a thinking job and lesson plans develop student teachers or pre-service teachers thinking skills.
- **It allows teacher trainer to understand the thought process of their student teacher.** From the lesson plans, it can be identified easily that which students are investing their thinking skills more and which are not participating.
- **It can be greatly simplified and abbreviated once these teachers are fully engaged in their teaching practice.** You can also predict that how well a student is going to perform in future as a teacher.

Templates of a lesson plan:

Here are three templates presented and then analysed them for better understanding.

Bases of lesson plan templates:

	Hunter (USA) 1984	**John (UK) 2004**	**Tru (Canada) 2008**
1.	Materials/Resources	Resources	Materials and resources (including behavioural/organizational management strategies)
2.	Anticipatory set (list specific statements or activities which are used to attain student's attention)	Starter	Introduction (anticipatory set)

	Objective/purpose (for the students benefit, explain what students will be able to do by the end of the lesson and why these objectives are important to accomplish).	Objectives	Learning outcomes
3.	Input (what information is essential for the student to know before beginning and how will this skill be communicated to students?)	Vocabulary	Preparation

1. In Hunter, John and Tru's template, the first thing is the resources and material which is common in all the three. Tru added organizational management strategies as resources also.
2. In hunter's template there is anticipatory set, John gives it the name starter and Tru says it as introduction. But the focus of all the three is the same that is how to get the attention of the students. Names are different but the purpose of all the three is the same.
3. Hunter uses the word objective/purposes in his template. John uses only objectives and Tru uses learning outcomes. It is quite confusing for many people that if there is any difference between learning outcomes or objectives. There are some educationists who have tried to identify the difference between the two. But in this template the words learning outcomes and objectives are used parallel. Only Hunter says that there must be a rationale on identification of objectives but the other two did not mention rationale. Hunter used the word input; John used the word vocabulary and Tru used preparation. Here the role of the teacher is important. Input is basically content.

	Hunter (USA) 1984	**John (UK) 2004**	**Tru (Canada) 2008**
4.	Model (if you will be demonstrating the skill or competence, how this will be done?)		
5.	Check for understanding (Identify strategies to be used to determine if students have learned the objectives)		

6.	Guided practice (List activities that will be used to guide student practice and provide a time frame for completing this practice)	Main activity	Student/ teacher activity
	Closure (What method of review and evaluation will be used to complete a lesson)	Plenary/ Assessment of outcomes	Closure
7.	Independent practice (List homework/seatwork assignment to be given to students to ensure they have mastered the skill without teacher guidance.)		

4. Here Hunter identifies model. But John and Tru are silent. They do not identify model in their template.

5. Hunter present check for understanding and its details in template but John and Tru does not define any.

6. Hunter's model is based on Gagne's model. He used guided practice as Gagne do. John used the word main activity for it and Tru used Teacher/ student activity.

7. Hunter used closure in his template while John used Plenary/ assessment of outcomes and Tru used closure

.

	Hunter (USA) 1984	**John (UK) 2004**	**Tru (Canada) 2008**
8.		Grouping	Extension
9.		Differentiation	Adaptation
10.		Difficulties/Successes	Reflections

8. In these templates, John says that after closure, there is grouping, and Tru says that there is Extension. Hunter is silent in this aspect.

9. John says that there is Differentiation and Tru says that there is adaptation. Hunter is again silent.

10. John says that there are difficulties/ successes and Tru says there is a reflection. Hunter is silent in this respect.

Unit plan vs. Lesson plan:

Unit plan	Lesson plan
Subject	Subject
Unit topic	
Lesson topic	Unit topic
Rationale of the topic	Instructional objectives
Instructional objectives	Rationale
Content and processes	Content and processes
Learning activities	Instructional procedures 1. Focusing event
(Parallel resources)	2. Teaching procedures 3. Student activities and participation 4. Formative check 5. Closure (Parallel resources)
Evaluation	Assessment
	Notes

So, there are many similarities because lesson plan is the part of unit plan. Overall, we can say that lesson plan is actually detailed form of unit plan. It originates from a unit but it is much in detail.

Lesson No. 17

LESSON PLAN FORMATS

Individual Education Plans (IEP):

As the name shows that individual education plans are those which are made according to the needs of the individuals. How IEP helps teachers to cater for the learning needs of diverse learners?

IEP is basically an extended adaptation of a lesson plan. The focus in IEP will be on the needs of the learners rather on the content to be taught. Teacher can write simple lesson plans because they are not extended or in much detail. But IEP are written in extended form. E.g. If a teacher writes a plan of a lesson for a whole class then it is a common lesson plan. But if a teacher prepares activities in a lesson plan for the students who have visual or hearing impairment, then it is essentially an individual education plan (IEP).

The *individualized* part of IEP means that the plan has to be tailored specifically to your child's special needs -- not to the needs of the teacher, or the school, or the district. Goals, modifications, accommodations, personnel, placement, all should be selected, enforced and maintained with the particular needs of your child in mind.

Differentiated instruction: Instruction that is catering for various learning styles and various learning needs.

Effective individual education plans (IEP) have key characteristics. They are:

- Individualized and child cantered
- Inclusive
- Holistic
- Collaborative
- Accessible

The IEP must include:

a. Any needed specialized equipment or materials.

b. Instructional strategies fitted to the pupil's learning style.

c. Techniques and activities designed to support the personal and social development of pupil.

Post Lesson Activities: Most of the times, we teachers think that most important thing in teaching is lesson planning and lesson execution. But post lesson activities must also be included in the lesson plans. **Post Lesson Activities are:**

- **Evaluating lesson plans**
- **Evaluating unit plans**
- **Record keeping**

The evaluation should be in written form not oral evaluation. And teachers need to do that evaluation on the format which is actually attached with the lesson plan. A good teacher is the one who plans a lesson, implement it and evaluate it after implementation.

Evaluation of students' learning:

We need to ask certain questions whenever we are evaluating. Whether we are evaluating our teaching or the learning of our students. Here are certain questions that must be taken into consideration while evaluating students' learning:

- **What did my students learn?**
- **What did students not learn?**
- **What was interesting for the students?**
- **What was difficult for the students?**
- **What evidence do I have for these findings?**
- **What will children learn in future?**

Task 1:

Read the following statements and choose the most appropriate one for evaluation?

1. **My students learnt to cooperate.**
2. **My students learnt to cooperate as they were made to work in groups.**
3. **My students learnt to cooperate as they resolved their conflicts.**
4. **My students learnt to resolve conflicts as when they were working in the group, they initially had conflicts and asked me to intervene or change groups. When I denied**

doing so, they in fact tried to resolve their conflicts at their own. All members were smoothly working towards the end of the lesson.

No. 4 is definitely the best evaluation statement. Because evaluation means judgement. A teacher could not give judgement unless she does not have evidence.

Evaluating Teaching:

There are also certain questions that need to be raised and answered while evaluating teaching.

These questions can be:

1. Did I achieve my objectives?
2. Did I build lessons on students' responses?
3. Did I communicate clearly with the students?
4. Did I provide equal learning opportunities to all my students?
5. Did I keep eye contact with the students?
6. Did I give feedback to the pupils constructively?
7. Did I manage time and resources effectively?

Task 2:

Read the following statements and choose the most appropriate one for evaluation?

1. **My teaching went very well.**
2. **My teaching went very well as all students seemed very happy.**
3. **I achieved my objectives as indicated by students' responses.**
4. **I was able to achieve first two objectives as indicated by students' performance on two questions which were given to them towards the end of the lesson.**

No. 4 is actually a good evaluative statement.

Do remember, whenever you are going to evaluate your teaching, come up with a judgement but provide sufficient evidence to support your statement.

Post Lesson Activity: "Keeping Notes"

Teachers' notes are different from that of the students, because students prepare notes for preparation of exams. They prepare the notes and then memorize them but when teachers make notes, they keep the detail of the content of the lesson to be taught in the class in those notes. Some

part of evaluation is also included in those notes. Keeping notes is a very important type of post lesson activity because a teacher can have the record of his/her teaching.

Purpose of keeping notes:

- To keep record of teaching.
- To plan for future
- To learn from experience
- To communicate with the principal
- To write research report

(Action research is very effective research for teachers, because it aims at improvement. Whenever you want to bring improvement there is always a need for action. When teachers are conducting research, they need evidence.)

Record keeping serves the purpose of future planning and improvement.

Research on lesson planning:

Lesson planning is very important and it has been extensively researched.

1. **Researchers have neither identified nor validated any widely accepted or consistently practical planning model. (McBer 2000).**
2. **Teachers use a variety of lesson plan formats.**
3. **Planning serves a guide to action.**
4. **Teachers tend to do much of their planning in minds rather than on paper.**
5. **Teachers rarely plan in linear model as encouraged in textbooks.**
6. **The best teachers apply planning flexibly.**

Components of a lesson plan:

1. **Grade level**
2. **Topic**
3. **Instructional aims: Student-oriented**

4. **Instructional objectives (**Instructional aims are broad while instructional objectives are narrow which you have to achieve during a particular time span. The statement of instructional objectives must always begin with: "By the end of the lesson, the students will be able to …." This includes objectives that are related to knowledge, skills and attitudes.**)**

5. **Rationale for objectives.**
6. **Lesson content (Outline of the lesson)**
7. **Instructional procedures**

- **Focusing event (It includes the ways to grab students' attention e.g. games, brainstorming etc.) Teaching procedures**
- **Students' participation and activities**
- **Formative check (How will you assess the students in class and what feedback will be given to them.)**
- **Closure (How will you close the lesson)**

8. **Assessment**
9. **Resources needed**
10. **Teaching notes**

Lesson No. 18

INSTRUCTIONAL SEQUENCING

Outline:

- Sequencing
  - Why to sequence?
- How to sequence?
- Principles of sequencing
- Can we sequence a lesson in one concept?
- Hierarchy of students' success
- Knowledge forms
  - Content
  - Process
  - Content forms Facts
  - Concepts
  - Generalizations

Facts vs Generalizations

Sequencing:

The art of developing logical plan for instructional activities is called 'sequencing'. Such a plan consists of interlink steps.

The steps are in progression. They start from simple and go to complex. So, if we start our instruction with complex things and then we move to something simple. We will see that sequencing is not a logical sequencing. It lacks logical plan.

Why to sequence?

- **Helps to make learning more manageable.**

When you are going to teach a child a complex concept or process, you need to isolate it into pieces. You cannot teach a complex concept straight away to the children. You need to divide it into bit and parts because after understanding bits and parts they can understand big picture.

- **Relate information to the bigger picture.**

If we do not sequence the lesson, then student will not be able to understand that what he is going to learn. What are the terminal objectives?

How to sequence?

- **Sequence objectives:** We need to sequence our learning objectives. Being teachers, we are supposed to make lesson plans and unit plans. While making unit and lesson plan, we have to sequence objectives. We should not make teacher-oriented objectives. Objectives should be child cantered; they should be student-oriented.

- **Teaching prerequisites:** there is prerequisite for everything you are going to learn. E.g. if we want to teach children essay writing, then we need to know if children know how to write a paragraph. Sentence formation is a prerequisite for paragraph writing and for sentence formation, vocabulary is prerequisite. Whenever we are sequencing, we need to know what a prerequisite for a particular terminal objective is.

- **If possible, communicate sequenced objectives to the students to involve them more in the learning process.**

Principles of sequencing:

- **Teacher needs to start lesson with simple steps.** It means that teacher must come up with at least one example so that the students can understand the concept easily. Ideally there should be numerous examples, but to start with, there must be one example.

- **Use concrete examples.** The examples which the students can see and can relate to them their learning.

- **Add complexity to the lesson.** If we are developing the whole lesson on very simple things and we are teaching the basic things, it means that we are not teaching a sequenced lesson. It is important in lesson plan but it should be taken into consideration while planning units that there should be complexity in it. You may start it with simple things but you need to add complexity to the unit.

- **Introduce abstractions. (heart beat and B.P)** Teacher needs to introduce abstractions. Abstractions are something which is not tangible. Abstract thinking is very important.

Children should be able to recognize and relate those things which are abstract.

For example, when a teacher is going to teach human circulatory system. Teacher may relate that with river system. The purpose of river system in a country is to supply water to the country. You can relate the river system with human circulatory system because human circulatory system is not visible. While rivers are concrete, children have seen rivers and canals. So if the teacher teaches the students by relating this example then students can understand the human circulatory system at basic level. You can take many other concrete examples like, electricity system or telecommunication system etc. only one example is enough for giving students the basic concept. But to develop the concept more firmly, you need to come up with some more examples. Invite the students that they should also come up with some more examples. In this way you are adding complexity in your lesson. You can add abstractions in this example of circulatory system by telling the student about heart beat or blood pressure.

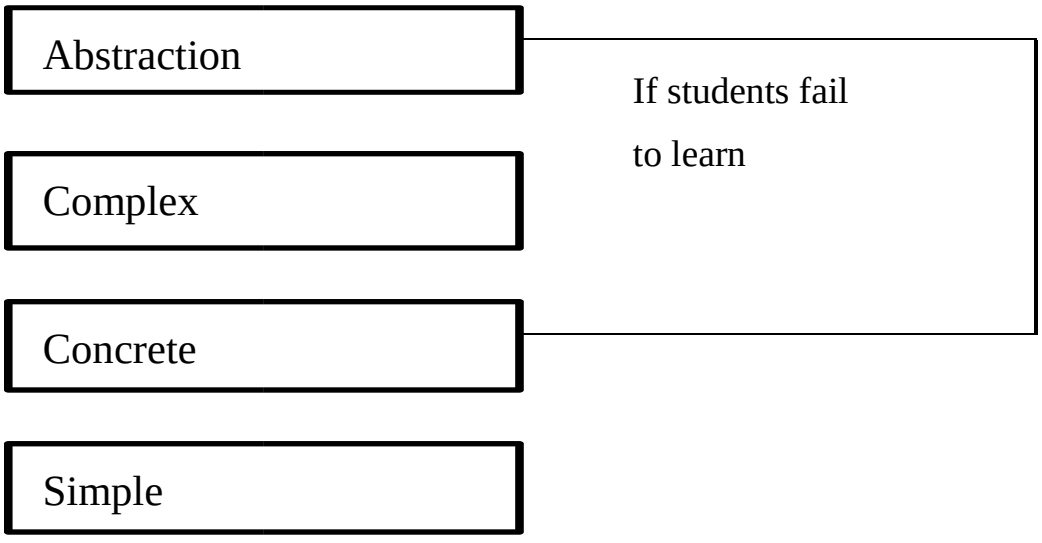
A person who has low or less heart beat can have dangers. So there are basically four principles of sequencing and you have to address them whenever you are sequencing your lesson.

Can we sequence a lesson in one concept?

According to research:

- **Total sequencing time may be 10 years.** There are many concepts that can take years in sequencing e.g. in mathematics, the concept of graphics. It takes at least ten years to understand this concept. There are certain concepts which can be sequenced in one lesson. There are concepts which can be sequence in a week. There are other concepts which can be sequenced in a unit. There are other concepts which can only be sequence in years. This time span is directly proportional to the complexity of a concept.

Hierarchy of students' success:



Recycling mode

Sequencing has different principles; these principles are the introduction of simple concepts. Then concrete examples. Then adding complexity to the lesson and after that taking student to abstraction. But if student fails to understand the abstraction concept, then there is a recycling mode by which the concept can be taught to them through concrete examples.

Knowledge forms:

Knowledge may be simply divided into two forms; one is **content** and the other is **process.**

- **Content is the information; you want your students to learn.**
- **Processes are the motor and thinking skills you want your students to learn.**

Content: example

Kinds of landforms i.e. mountains, valleys, plateaus is content knowledge.

Process: example

- Carrying out an experiment.
- Doing mathematics sums

This kind of knowledge is procedural knowledge.

Content forms:

- **Facts**
- **Concepts**
- **Generalizations**

Facts:

1. Singular in occurrence (describes something important)
2. Occurs or exists in present times
3. Does not help in predicting other facts
4. It is acquired solely through observations

Fact: examples

- Islamabad is capital of Pakistan -
- Today sun set is 6 p.m.
- There are 5 provinces in Pakistan

Concept:

- They are "category" words which enable us to group many individual objects or ideas under a common label. For example, chair, desk, mammal, verb, bird, noun, mountain, **friendship, democracy, love** etc. the highlighted are the abstract concepts. Some are concrete concepts. Learning concepts is quite natural to all human beings.

- All concepts have five essential components: Name, definition, characteristics, examples and place in hierarchy.

Generalization:

- A generalization is an inferential statement that expresses a relationship between two or more concepts. It applies to more than one event and has a predictive and explanatory value.

(When we talk about inferential statement, it means that this statement is derived from somewhere and which is explaining the relationship between one to two concepts. It has a predictive value and explanatory value.)

Example:

People who smoke have a higher incidence of lung cancer than those who don't. it applies to anyone who smokes and has a predictive value.

Facts vs. Generalizations:

Facts and generalizations are not the same. Generalizations are basically a relationship between concepts. While facts are singular in occurrence. The difference in both in discussed below:

- Generalizations are inferences that condense a large amount of data while facts are singular in occurrence. For example: Sunset occurs earlier everyday between June 21 and December 21 is a generalization but the sunset at 6 p.m. today is a fact.
- Facts have past or future orientation but generalizations are statements about general trends or patterns.
- Generalizations have predictive value but facts do not have that.
    - We need to take our children from factual to conceptual knowledge and from conceptual to generalizations.

Being teachers, we need to take students from facts to generalizations. Because factual knowledge is very simple knowledge. In Bloom's taxonomy, factual knowledge comes at the lowest level of learning. As soon as we add complexity to our lessons, we need to take students towards generalizations. Rather we need to ask our children to make generalizations. We should provide them with the environment that they should be able to come up with generalizations

Lesson No. 19

MODES OF PRESENTATION AND TASK ANALYSIS MODEL

Outline:

- Modes of presentation
- Deductive reasoning (General to specific)
- Inductive reasoning (Specific to general)
- Gagne's experience of teaching

Task Analysis Model

Individual Education Plan and Task Analysis Model

We know that knowledge is of three kinds; declarative knowledge, procedural knowledge and meta-cognitive knowledge.

- Declarative knowledge: Facts and concepts are there in this kind of knowledge.
- Procedural knowledge: The processes are involved in such learning.
- Meta cognition: is cognitive about cognition.

Being teachers, we need to give all these kinds of knowledge to our students. There are different ways to deliver knowledge.

Modes of presentation:

- **Deductive reasoning (General to specific)**
- **Inductive reasoning (Specific to general)**

For example, human beings are mortal. This is a very general statement. All men are mortal, and then we say that Ahmad is a man, so he is also mortal. This is deductive reasoning; that you gave general statement first and then goes to specific i.e. Ahmad is mortal because he is also a man.

In inductive reasoning, we start with specific and goes to general. We say that Ahmad is a man and he is mortal. There is another man named Umar, he is also mortal. There is another man; we say he is also mortal. So, we can say that all men are mortal. Then we talk about women and say, Ayesha is a woman, she is mortal. Amna is women, she is also mortal. All women are mortal.

Now you say a general statement on all these men and women that is 'All human beings are mortal.' This is known as inductive reasoning.

Here are two columns, try to identify the difference between two modes of presentation

Definition of noun	Brainstorming on names
Characteristics of noun	Examples of names
Examples of noun	Characteristics/ Commonalities in names
Place in hierarchy	Definition of nouns

Children can learn nouns by both the methods explained step by step in the above two columns. But the difference is that the first column is of deductive reasoning i.e. teacher has told a definition and then they are proving the definition by characteristics, examples and place in hierarchy. So, this is a sequence called deductive reasoning.

In second column, inductive reasoning is followed. Teacher asks the students to tell the names of different things. He starts with brainstorming of names of different things. Students may tell the names of places, birds, flowers, animals etc. then he tells the students about what are commonalities i.e. what names are of birds, or animals or places etc. he characterizes it. Then he says that what we have learnt by telling the names is called noun. So, noun is the name of a person, place or thing.

- There is a drawback in deductive reasoning i.e. no fair observation. So, if you really want your children to learn skill of observation then actually inductive mode of presentation is better than deductive mode of presentation.
- An important thing in inductive mode of presentation is **Process.** In deductive mode, children learn reasoning and concepts, but in inductive mode, there is also procedural knowledge that is given to the students. They can learn to generalize facts. It is more child-centered. So, it is better to use inductive mode of presentation.

Teaching subtraction:

Here is an example, try to analyse if the following steps are sequenced or not?

Analysis to teach subtracting the whole numbers.

Teacher teaches them:

1. Subtracting in simple columns.
2. Subtracting when a "0" is understood.
3. Subtracting one-digit number with borrowing.
4. Subtracting when single borrowing is required in any column.
5. Subtracting when several borrowings are required in non-adjacent columns.
6. Subtracting when double borrowing is required (across zero)
7. Subtracting whole number of any size.

Most of the times, the teachers who are very good at sequencing lessons, they sequence their lesson or unit on subtraction in this way. Teacher starts with simple subtraction of simple columns and move to complex subtraction i.e. subtracting whole number of any size.

Gagne's experience:

Gagne taught the students and he was very happy because the students' responses were very good, they were performing very well in class. But what happened in examination? Students did not perform according to his expectations. After that, he observes that what the actual reasons behind it were. Was there any weakness in his teaching? Or there was any problem with students' learning? Actually, his instruction was very much in sequence but not according to the learning hierarchy. Learning hierarchy is that the terminal objectives and goals should be interlinked with intermediate objectives. And those intermediate objectives should be interlinked with the basic skills. This hierarchy was developed by Gagne after his own experience. Gagne was a wonderful teacher in sense that he reflected on his own experience of teaching and then developed a learning hierarchy.
Task analysis is very important when you are going to give the students procedural knowledge.

You have to analyse the whole task which you are going to teach to the students.
There are some prerequisites and developed things. The most important prerequisite is simple subtraction in this example. There is only one terminal objective i.e. subtract whole number of any

size. The other that comes under is intermediate objectives. And then there are basic skills. So, being teachers, we are supposed to sequence our lesson but at the same time we need to analyse the whole task.

Task Analysis Model:

The most important thing in using task analysis model is that we need to:

1. **Select an appropriate objective that is at the appropriate age level.**

   It means that whenever we are going to teach students, any lesson or topic, it should be according to the age level of the students. We must know that the students of this age can do a particular task. E.g. if we talk about addition, you can teach addition before subtraction.

2. **Identify the enabling skills students need to attain the objective.**

   There are two things very common; one is the content to be taught and second is enabling skills. Enabling skills are those skills which are required to achieve a certain goal. E.g. your terminal objective is: by the end of the year, students will be able to write a persuasive essay. Then the enabling skills would be; the students should know how to write an essay, they should know the structure of the paragraph, they should be able to identify a topic sentence in a paragraph, they should be able to write a topic sentence, they should be able to write a thesis statement in an essay etc. So, all these skills are enabling skills.

3. **Subdivide independent and dependent enabling skills.**

   Independent enabling skills are those which are prerequisite actually. They are not dependent on anything. And dependent enabling skills are those which depend on prerequisites. E.g. in English, you are teaching students writing. So, writing a sentence is an independent enabling skill. While writing a paragraph is a dependent enabling skill.

   If a child does not know how to write a sentence then definitely the child will not be able to write a paragraph. So, paragraph writing is dependent on sentence writing. Similarly, essay writing is dependent on paragraph writing. Enabling skills are divided into two categories; one is independent skill and the other is dependent skill. Being teachers, when we are analysing a task, we need to know which skills are dependent and which are independent.

4. **Arrange the dependent and independent sequences in order.**

   It is our assumption that independent skills are prerequisites, so students know them already. We do not need to teach those skills. Research says that if we know that a skill is independent and students know it already, we need to test them on their prerequisite. Unless we do not establish their prerequisite, we will not be able to teach them any dependent skill. There are many ways to test the prerequisites, i.e. diagnostic tests, close test, gapping exercise etc. these are the ways to diagnose students reading comprehension abilities. E.g. If the student is unable to read even very simple words then we could not teach them complex reading skills i.e. comprehension. So, it is important for the teacher to arrange their sequence of instruction in this order.

5. **Sequence specific tasks for the students.**

   In essay writing, if we set our objective that students will be able to write a persuasive essay after 20 lessons, then we need to identify enabling skills for each lesson. Then we need to identify the task according to those enabling skills. E.g. if your objective is to write an argumentative essay, the first enabling skill for it would be logical reasoning, the second is the difference between fallacy and logical argument, third is the writing skill, fourth is appropriate vocabulary etc. All these skills should be in your mind, you have to list down these things when using task analysis model. After doing this, you have to sequence your instruction and then you will identify which tasks should be given to the students in a sequence. You have to keep in mind your terminal objectives, prerequisites and intermediate objectives. Do remember that intermediate objectives would be much more than the terminal objectives and the prerequisites.

So, task analysis model is a very important model as it helps the teacher to identify prerequisites; it helps the teachers to subdivide the whole unit into small pieces and see which dependent enabling skills need to be developed in students.

Individual Educational Plan and Task Analysis:

Task analysis is important to cater for individual learning needs. Individual educational plans are usually opposite to inclusion. In inclusion, we say that there is same learning for all the students.

Individual educational plans are basically constructed for the children who have additional learning needs. There are students with different abilities in your class and you are teaching them by using same strategies, so it means we are not going to do justice with the students who have different learning needs. When we talk about individual learning needs and additional learning needs, it is not necessary that it should be based on the IQ level of the students. There are different students in your class with different prerequisites; you need to test those prerequisites and if the students do not have them, it is the responsibility of the teacher to teach them those independent skills. So in individual educational plan, there is frequent use of task analysis model. Being teachers, we need to make individual educational plans for all the students who have additional learning needs.

Lesson No. 20

INFORMATION PROCESSING THEORY AND GRAPHIC ORGANIZATION

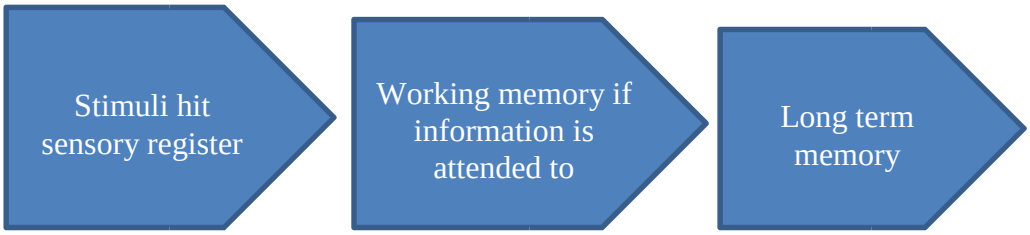
Outline:

- Information Processing Theory (IPT)
- Facts of IPT
- Elaboration
- Methods of elaboration
  - Drawings
  - Metaphors and analogies
- Summarizing in your own words
  - Questioning
- Ways to use visual tools
  - Brainstorming
  - Suggestions for brainstorming
  - Comparing and contrasting
  - Classification
  - Table thinking tool

Declarative knowledge is consisting of facts, concepts and generalization. Now the question is how to develop the deep understanding of the children. For deep understanding of children information processing theory is very important.

Information Processing Theory (IPT)

Nothing is learnt unless it is in long term memory. Working memory is our conscious memory.



We have short term and long-term memory. Between both of them there is working memory.
The interesting thing is that our emphasis is on working memory. Working memory is our conscious memory. We do not know much about working memory and how it operates. This theory says that every learning should be the part of long-term memory. Automation is the ultimate learning. Short term learning is named as sensory register in information processing theory.

Facts of IPT

- Humans can keep only 5-9 unrelated pieces of information in their working memory at one time.
- If most or all the space in working memory is taken up in lower level skills, higher level thought such as analysis cannot take place. Space is limited in child's mind; teacher have to see this that how he can utilize this space.
- By organizing information into related 'chunks' much more information can be held in working memory.
- Images are much economical and take less space in our working memory than ideas expressed in words.

A picture is worth a thousand words.

A lot of information can be communicated through a picture. Its example is that if we want to know the address of some place it will be easier to know through map than the oral direction. Nowadays universities or organizations show their maps on their websites for the comfort of the people. Visual tools are very important and significant in learning.

Teachers need to use visual tools very often in instruction to ensure learning.

Increase in the space of working memory

First thing is elaboration. It is very commonly used teaching strategy which helps in developing space in working memory at the same time information in working memory goes into long term memory.

Elaboration

- It is the form of rehearsal but different from maintenance rehearsal (cramming). The former allows us to hold information in conscious working memory just long enough to decide what to do with it. It is not suited for long term storage.
- Elaboration means **adding on**. It requires conscious and deliberate thought during which we relate the new information with something already known and understood.

Elaboration is different from maintenance rehearsal. What is maintenance rehearsal? When we learn something, we do some kind of drill to maintain it. When we do or cram something to remember it is called maintenance rehearsal. It never becomes the part of long-term memory. When we put something in working memory through maintenance rehearsal it will last till the time it needs.

Methods of Elaboration

Drawings

Children read some text, one situation is that teacher may ask some questions at the end and we can assess the understanding level of children. Second situation is that teacher may ask them to show the pictorial demonstration of the text. It is adding on. Adding on must not be confusing.
Same theme can be represented differently.

Metaphors and Analogies

There is an example of elaboration through metaphor. Teacher teach the concept of cell to students and then ask them to find some metaphors. Below is the table on the left side there are the parts of cell and on right side there are metaphors of football. Different groups gave their different thoughts one group said that cell is like a football game. In the cell the central point is nucleus which holds the whole activity. In football it is the referee who controls the game. Goal keeper's function is also like

a cell wall. Mitochondria gives energy to cell. Sports drink also do the same functions. Maybe the teachers have used the task analysis model but they asked the students to elaborate. All the knowledge in working memory will become the part of long-term memory through elaboration.

Cell	Football
Nucleus	Referee
Ribosome's	Red and Yellow cards given by the referee for infractions
Cell Wall	Goal keeper
Cell Membrane	Defensive player
Cytoplasm	Game field
Mitochondria	Sports drinks

Summarizing in own words

Questioning

Teacher may ask students to construct questions. Questions of students are more important than the questions of teachers. For example, teacher teaches the students a biology lesson and then ask the students to construct four such questions which are not in the book and also not discussed in the class.

Definitely children think a lot because they have to construct those questions which are not in the book but related to the text. Asking question is a skill. It is a skill on student part also. Questioning is very important tool for learning. It helps to take information from the working memory to long term memory. Questioning has a lot of significance value. In elaboration it is an effective strategy.

Ways to use Visual tools

Brainstorming

To describe a thing, a common tool is brainstorming. In brainstorming we write the central information in the middle and then ask students to come up with their ideas, we write everything

around that central place. The important thing in brainstorming is that you do not reject ideas. We write every idea; the step of omission comes later. For example, we take the central idea of a Fish. And ask the children to come up with their ideas regarding Fish, maybe some children give relevant or some give irrelevant thoughts.

Teacher should remain relaxed while doing brainstorming. In brainstorming we are inviting ideas from students. There will be noise at that time, teacher must be relaxed.

Suggestions

1. Relax
2. Don't worry about organization
3. Think quantity
4. Be positive, don't criticize
5. Keep ideas simple
6. Develop all ideas
7. Keep working
8. Combine to improve each other's ideas

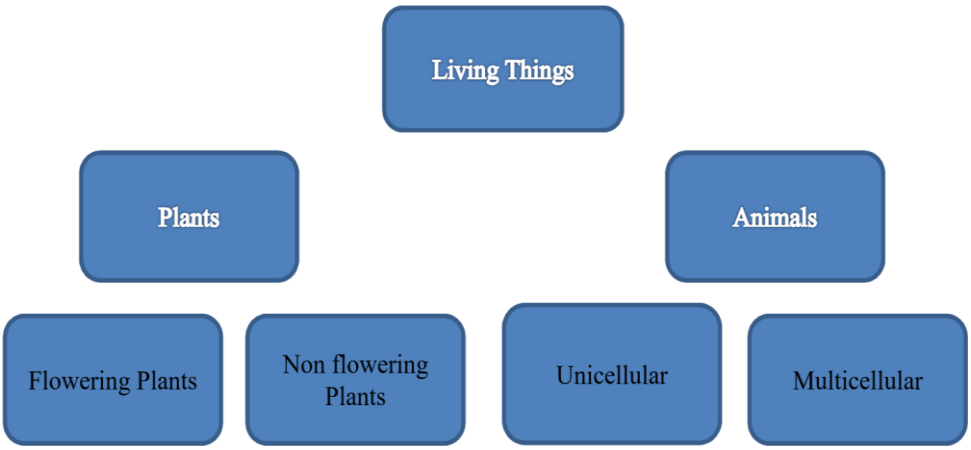
Brainstorming is an effective strategy when you are going to gain ideas or describe something. It may be used for both purposes.

Comparing and Contrasting

Another visual tool is comparing and contrasting. There are a lot of similar or contrast things in spring and summer season. A very important tool for comparing and contrasting is **Venn Diagram**. Depending upon the concepts, if we have two concepts, we use two circles to compare and contrast. Overlapping area will be that area where we will write the similarities. And the areas that are not overlap we will write different things in that.

Classification

This is the visual tool to classify something.



In description form we will have seven unrelated units. This whole information may be presented in one unit in the form of a picture. Children will be able to learn many other things. Images occupy less space in our working memory. Being a teacher, it is always good to use visual tools.

Table thinking tool.

This tool is for thinking skills. It will be easier to relate the things in the form of table. Below is an example of table thinking tool.

Gas	Liquid	Solid
May be compressed	Take shape	Cannot be compressed
Steam	Water	Ice
Cylinder, balloon	Containers	Independent structures

Average students can act like high achievers by using visual tools.

Lesson No. 21

MODELS OF LESSON ORGANIZATION

Objectives:

By the end of the lecture, you will have reflected upon:

- Presentation as a useful teaching method to teach concepts and procedures.
- Modes of presentation i.e. Inductive and deductive.
- Two models of lesson organization i.e. Concept analysis model and Advance organizer.
- Identified the use of two models.

Presentation is a teaching method where a teacher presents concepts and procedures. This method is used when we are expecting from the students to learn concepts and procedures. In a Task Analysis Model, the children learn procedures, but their conceptual understanding also takes place.

The two methods, Concept Analysis Model and Advanced Organizer are used to teach different concepts to the students. **Concepts are basically ideas; they could be one-word ideas, two-word ideas, any statements or generalizations.** Some generalizations could be taught through presentations.

Examples of one-word concepts are: Beauty, food, energy etc.

"Modes of presentation: Deductive & Inductive"

1. **Deductive mode (General to specific)**
2. **Inductive mode (Specific to general)**

Example of deductive and inductive method:

Deductive method:

Teacher tells the students that **'Water is necessary for plants to grow'.** Now the teacher asks them to prove it. He gives them a task to put two plants in the sunlight. Give water daily to one of the plants, and observe them after 15 days and tell which plant grows and which one is withered. Now the students are proving that plants really need water to grow.

Inductive Method:

Here the teacher does not tell the students that water is necessary for plants to grow. He directly gives an experiment to the students; to put two plants in sunlight for 15 days, give water to one of them and leave the other as it is in sun. Give a result after 15 days that what happen to the plants. Now after experimenting, the students will give a conclusion that plants need water to grow, if they give such conclusion then it is definitely an inductive mode of presentation. **Deductive and inductive are not only the modes of presentation but modes of experiments also.**

"Concept Analysis Model as a planning tool"

Concept Analysis Model is a very good model to teach different concepts to the students.

There are five components of a Concept Analysis Model:

Concepts have:

1. **A Name**
2. **Definition**
3. **Characteristics/ Critical attributes**
4. **Examples and non-examples**
5. **Hierarchy:** it means that some concepts are higher, lower or lies on that concept.
    - **Superordinate concepts:** The concepts which are at upper level.
    - **Coordinate concepts:** The concepts which come under that concept.
    - **Subordinate concepts:** The concepts which are of lower level.

Example: Concept of Noun

Name:	Noun
Definition:	Name of a thing, place, person or abstract entities (Like; birth, happiness, magnetism)
Characteristics:	Endings (painter, scientist, magnetism), most have plurals.
Examples:	River, capitalism, capital, Kamran etc.
Non-examples:	Eating, walking, standing, writing, reading etc.

Superordinate concepts:	River, capitalism, capital, Kamran etc. Noun comes in Parts of Speech; a Part of Speech is itself a concept. So, noun lies under this concept.
Coordinate concepts:	All the concepts which lie in parts of speech are all parallel to noun. E.g. adjectives, verbs or adverbs etc.
Subordinate concepts:	The concepts which comes under noun are subordinate concepts. So, the two types of nouns i.e. common noun and proper noun are subordinate concepts of the concept NOUN.

Example: Two teachers are going to teach a concept of noun; one is following deductive mode of presentation and the other is using inductive mode.

1. **Deductive mode teacher (example):**

   Teacher will tell definition of a noun to the students which is usually told in schools is "a noun is a name of a person, place or thing". Then he will give examples to the students i.e. table, chair, book, board, school, river, Pakistan etc. the students learn this information about a concept of noun. Some teachers will try to give a better definition and will include abstract entities as well.

2. **Inductive mode teacher (example):**

   The teacher who is following inductive mode of presentation will ask the students to tell names of different things. He will write all the names on the board and ask the students to identify the things which end with "ism" or "ist". He will make groups of both.

   The students will identify them and then the teacher will ask them to tell the commonalities in them. Students will make a definition of a noun together. This is inductive mode of presentation. The results which the students gather from the discussion will help the students to create the definition. Teacher will ask them the characteristics of those things. Teacher will ask the students about the subordinate or coordinate concepts of noun instead of telling them.

Teachers can use either inductive mode or deductive mode, but the important thing is to include all the things that are present in the Concept Analysis Model.

Why this model is called Concept Analysis Model?

A concept must be dealt with bits and parts. Every aspect of a concept must be addressed. E.g. its definition, examples, critical attributes or superordinate, coordinate or subordinates etc. So, if any concept is taught by only its definition and examples, it means that we are not doing justice with that particular concept.

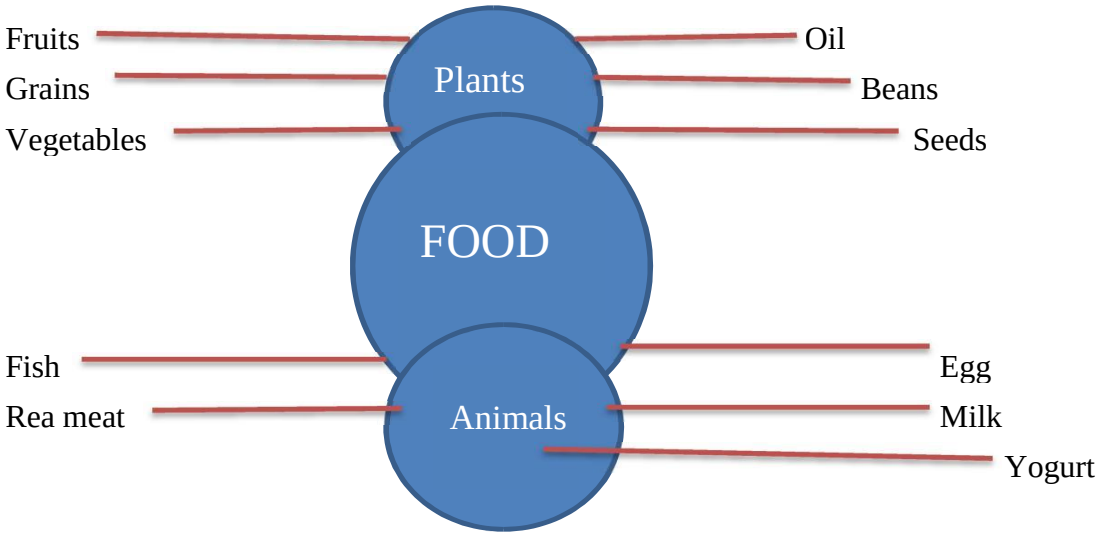
Example : Concept of Food

Name:	Food
Definition:	Food is any substance consumed to provide nutritional support for the body. It is usually of plant or animal origin.
Characteristics:	i. Most foods have taste. Though water is tasteless. ii. Some food is cooked while other not. iii. Sour foods contain organic acids.
Examples:	Vegetables, fruits, milk, egg, fish, rice, water, wheat, chewing gum, chocolate and many more.
Non-examples:	Animal feed, live animals (unless being prepared for sale in a market), plants prior to harvesting is not a food, medicinal products, tobacco, narcotics, cosmetics etc.
Superordinate concepts:	Health & nutrition, food science, food technology.
Coordinate concepts:	Diet, dietary habits.
Subordinate concepts:	Food pyramid, organic food, whole food, natural food, junk food.

So, we have decided that whenever we are going to teach a concept to the students, we need to analyze that thoroughly in terms of its definition, characteristics, examples, non-examples and hierarchy. And we need to ensure that our students understand all these related things regarding a concept so that they can understand that particular concept.

Advance Organizer Model with example:

This is a model which provides you the big picture completely. E.g. If students are going to learn the concept of food, then teacher must have the complete picture of it. You can observe the graphic picture below:



This picture must be presented to the students before teaching them the concept of food. i.e. in advance you present the whole thing to the students. Graphic organizer is also known as **concept map.** Advance organizer can be in the form of graphic organizer, tables and schemes.

Advance Organizer Model:

Advance graphic organizer has three major components or attributes.

- Advance organizer is a statement of those elements that the learner will be required to master in a lesson. i.e. it may be a statement or word e.g. food, noun etc.
- Advance organizer presents 'big picture' to establish relationship between different concepts.
- Advance organizer model is based upon deductive learning.

Advance organizer model is useful for the teachers to communicate their expectations to the students that what actually they are going to learn.

Discussion:

Advance organizer model uses deductive approach but it is part of deduction that when things are isolated, they need to be integrated also. E.g. food. In the example of food, all the things are isolated in the big picture above. When we will integrate it we have to reinforce the concept of food again to the students. After doing all this, a teacher can move to the other concepts to teach. After integrating all the components of a concept, a teacher can ask the students to describe the concept of food in their own words. It is very different from concept analysis model. The major difference in advance organizer and concept analysis model is that when a teacher follows concept analysis model. he has to tell the characteristics, examples, non-examples and hierarchy of a concept. While following advance organizer model, a teacher doesn't need to give characteristics, examples, non-examples or hierarchy or even the definition of the concept as well. A teacher only needs to present all those things and students have to understand it. So, in advance organizer model, teachers don't need to follow all the things that are followed in concept analysis model.

Advance organizer gives teachers a big picture; they have taught all the components of that big picture to the students by isolating them. After teaching the concepts, the concepts need to be integrated. Concept analysis model is the best model to integrate all the components of a concept.

Advance Organizer Model can be used to teach:

- Any concept that has a big picture.
- In mathematics, only concepts are not important, procedures are also important. Students need to learn procedures and logic. If students have got the concept but they are unable to follow a certain procedure. Now here, advance organizer model cannot be used such successfully. Task analysis model is a very good model to teach mathematics.
- A teacher must know what are the concepts where advance organizer model can be used and where it can't.
- Advance organizer and Concept analysis model are very good models to teach different themes in science, social studies, Islamiyat and even in languages.

Do remember that no method is always useful. Every model has its contextual importance.

Lesson No. 22

MULTI-METHODOLOGY AS AN INSTRUCTIONAL PROCESS

Outlines

- Multi Methodology
- Right vs. Left
- Implications for teaching.
- Creativity and Right- hemisphere Objectives
- Learning Styles
- Harvard Gardner's Multiple Intelligence

Being teachers, we must know how human mind perceive the classroom knowledge? How does human mind work? And where the information store in the brain. We will talk about the importance and use of multi methodology. Our mind works in a peculiar way, it has right and left hemispheres. Child's mind is on developmental phase till the age of 8. By the age of 8 these sides are well developed.

Multi Methodology

Different types of mental functions occur in the left and right hemisphere. Our brain is composed of right and left hemisphere. And these are responsible for different kinds of functions. Below are some functions carried out by right and left hemisphere.

Right vs. Left

Right	Left
1.Visual	1.Verbal
2.Nonverbal	2.Logical
3.Spatial	3.Categorical
4.divergent thinking	4.Convergent thinking
5.Intuition	5.Detail

Divergent thinking is more creative. Divergent thinking is outside the box thinking. For creativity divergent thinking is very important. We do not think in fixed manner. We can ask some strange questions. Right hemisphere is responsible for this type of thinking.

Convergent thinking is more focused. For example, we have a lot of different facts and ideas and we carried out some results of them or logically converge them. Evaluative, analytical and logical thinking includes in it. This type of thinking is done by left hemisphere.
Guessing is basically intuition. Some people have intuitive feeling. Their right brain is prominent in this function.
When we see someone, we recognize him by face this is the function of right brain. But to associate the name with face is the responsibility of left part of brain. Some people can remember both name and face it means that they're both sides are working equally. Those who remember the faces it means that their visual and spatial part is strong and verbal part is weak.

Implications for teaching.

- **Teachers should plan instruction to enhance both hemispheres.**
- **Teachers persistently emphasis objectives and instruction that focus on the left side of brain.**
- **We always talk about creative thing and synthesis in higher level of Bloom's taxonomy. What happens in actual classroom?**

A research was conducted and it was reported that teachers mostly focus on left hemisphere of children. In left hemisphere there is logical thinking, verbal intelligence, details and convergent thinking. As a result of such instruction left brain function dominates. There is imbalance between right and left brain. For teachers it is important to construct their instruction in such a way that s suitable of the development of right as well as left brain. When we talk about right side there is the function of creativity and divergent. The problem for the teacher is to construct such objectives that can be measurable. There is a difficulty to measure the creativity. Performance objectives are those objectives that are measurable. A teacher must work hard to create these kinds of objectives.

Creativity and Right- hemisphere Objectives

Create a story by using a story starter, in which all the physical elements of the story starter are incorporated into the plot.

This is the function of divergent thinking. Objective must be in the form that it can be measured. If we will ask the question Create a story of your own choice? It will not be the performance objective. It is vague its ca not be measured. Maybe a child writes a brief story or someone else writes a skilful

story. So, our objective should measure the creativity of all kinds of children. But we must give the space to the children for their divergent thinking.

Using only three primary colours, create a painting that includes all the elements of the modern style.

Create a brochure to signify cell travel.

A teacher must create such objectives that help the students to develop both their right and left side of brain. And even in their practical life after school they will be able to use both sides of their brain.

Learning is not appropriate, if both sides of brain are not working appropriately.

Multimethodology

Multi means many and methodology means collection of different methods.

It provides instructionally rich classroom by making use of a variety of teaching methods and techniques like:

1. **Project learning**
2. **Inquiry/student research**
3. **Lecture**
4. **Demonstrations**
5. **Videos**

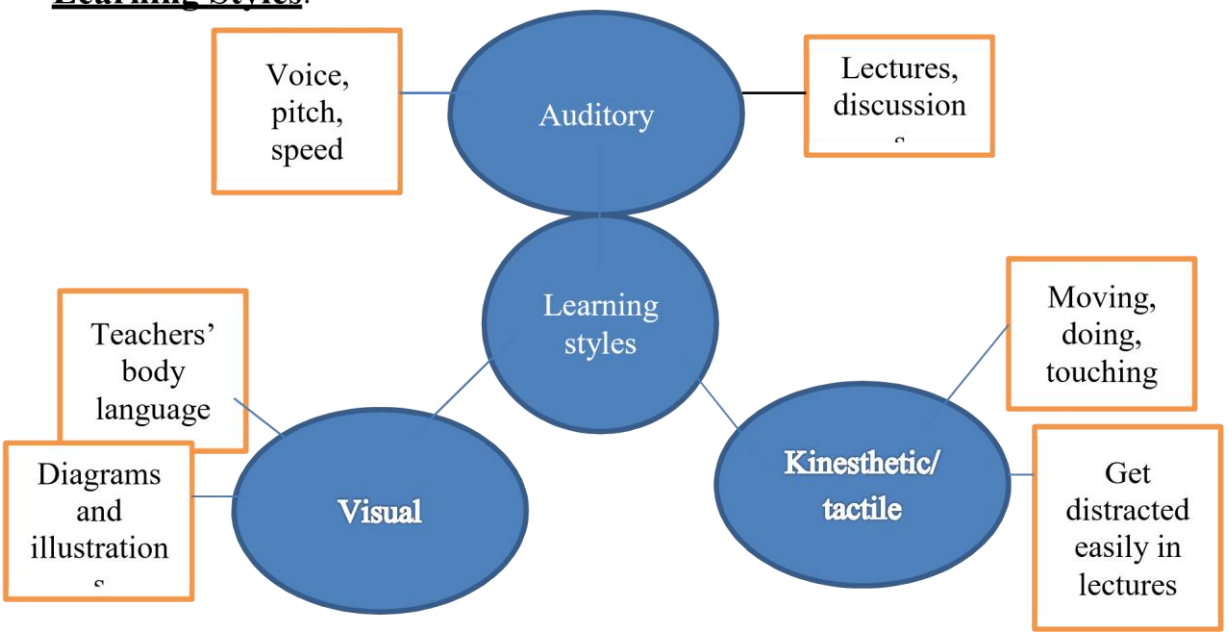
When we plan a unit, we must have arrange of different methods in our planning.

We can use techniques or different tool in classroom they will make up for multi methodology.

Maybe we start our lecture with brainstorming we will wind it up. Then we will give them 5 minutes lecture or we will demonstrate something to them. Maybe we will show them a video of 2 3 minutes. There are multiple intelligence in children. Attention time of small children is 10 minutes. For elder ones it maybe of 15 minutes. If we have a 40 minutes lecture time and we are only lecturing to the student and their attention time is not more than 15 minutes. They will distract after sometime. Variation is the quality of a good lesson. There must be some techniques after short intervals that may address to various learning styles. We may use different strategies in 30 seconds also. How it can be happens. Its example is that we can show a 30 second visual clip to the students and we may

ask them to see it for 30 second and identify the things in this clip. This is also a strategy. To be a good teacher it is necessary to use different strategies.
Because it has a lot of benefits. And students also enjoy this type of learning.

Learning Styles:



There are three learning styles

1. **Auditory**
2. **Visual**
3. **Tactile**

Auditory is related to hearing. Children with auditory learning style enjoy lectures and discussions. They enjoy listening. Voice pitch matters a lot for these children they do not understand only visual tools. In every class we have auditory, visual and tactile learners. Teacher will use its voice as a tool for the auditory learners. Fast speed of the voice of teacher will be disturbing for this type of learners.
Demonstration method is a very good method for visual learners. It is said that good lecturers are those who use audio visual aids with their lecturing. A lecture could be useful with the visual learners only if they are accompanied with audio visual aids. Diagram illustration is also very important for

this type of children. Teacher's facial expression also matters for these children. Teacher's body language does matter for these children.
Tactile learners are those who can learn by touching. Kinesthetic learners are those who are most disadvantage learners in the classrooms. Doing is very important for these children. Teacher must give the opportunity to the learners for experiment. We have students who have different learning styles. Some children do not have predominant learning style they change themselves according to the situations. Some learners have distinct learning styles. Being teachers, we have to be sensitive according to the needs of children. Multi methodology will be helpful for all kinds of learners.

Harvard Gardner's Multiple Intelligence

Intelligence is the ability to do a lot of mental work. Harvard Gardner challenges this thing that ability is not of same kind. There are 8 different kinds of intelligence.
It is said that you get job because of your IQ and you sustain job because of your EQ (emotional IQ).

Harvard Gardner's multiple intelligences.

S#	Intelligence	Description
1.	Visual/Spatial	Ability to perceive the visual (puzzle building, charts, graphs, painting etc.)
2.	Verbal/Linguistics	Ability to use words, Good auditory skills. Generally elegant speakers.
3.	Logical/Mathematical	Ability to use logic, reason, classification, problem solving
4.	Bodily Kinesthetics	Ability to control body movements and handle objects carefully. Sports, dancers, artisans.
5.	Musical/Rhythmic	Ability to produce and appreciate m Remembering melodies, singing, whistling.
6.	Interpersonal	Ability to relate and understand others (it uses verbal and nonverbal language)

7.	Intrapersonal	Ability to self-reflect and being aware of one's inner state. It is about recognizing own strengths and weaknesses, evaluating own thinking patterns.
8.	Naturalist	The ability to explore nature

Some students are very good in interpreting the graphs. This is because of higher spatial intelligence of the children. In childhood teachers have to work on all 8 types of intelligences. Children with verbal ability are the elegant speakers. They know how to use the words. They know how to speak.
Third type of children is very good in problem solving. They can reason. Their convergent thinking is very good. They talk with logical sequence. They can classify the things.
Children in forth category are good sports persons. Dancers includes in this category. Control on the body movements is the part of this intelligence.
Children who appreciate music have musical intelligence. They can recognize the melodies.
Some people can relate or communicate with the people easily. We feel happy to interact people with smile. We can provide information in two ways happily or coldly. This is the interpersonal skill. Communicate with out expression is another thing. Verbal communication is important but nonverbal communication is also very important. Being teachers, we need to develop the interpersonal intelligence of our students. Because we are social beings we do not live in isolation. We must know how to relate with other people.
Sometimes we do not know about our strengths and weaknesses. Intrapersonal skills mean knowing our own selves. And accordingly, we make our future. Philosophers have a lot of intrapersonal intelligence. It is time consuming to develop intrapersonal intelligence.
Some people are very much concerned about nature and their surroundings. They love to be with nature. They try to explore nature. Being teachers, it is our duty to improve different intelligences of all the students.

Lesson No. 23

CONCEPT OF CHILD

Outlines

- Objectives
- What is a child?
- Some facts about child Development
- Developmental milestones
- Milestones in Early years
- General milestones in early childhood education
- Piaget's stages of cognitive development
- Milestones for 4-year-old Children
- Milestones for 5 years old child

Objectives

- By the end of the session, you will have:
- Reflected upon your own image of a Child.
- Reflected upon the concept of holistic Development of a child.
- Identified general milestones in early years.

World is full of the images of the children. There are a lot of images in advertisements and pictures. These convey the message of the thought about children. Society is the extension of school and school is the extension of society. Teacher is also the product of this society and he also has some image about child. And he device his teaching methods accordingly. If the teacher thinks a child as blank slate whatever he writes on it, it will be the part of his personality. Our teaching method will be according to this thought.

What is a child?

Is a child a "tabula rasa" an empty vessel to be filled by knowledge? (John Locke)

In some journals there are very terrible images of children one image is that children are the containers of poison. Thought is that teachers, parents and society all put their poison in the child. We can debate on this image. If the child is an empty vessel then there will be poison if we fill it with poison.

Child is a biologically learned being. What is learned by one organism may be transmitted biologically to others. (Darwin)

Child has the capacity to learn and transmit that knowledge to others. Child is a natural discoverer. (Bruner)

Are all children perfectly designed organisms, who are ready to learn from their surroundings? (Rousseau)

It means that learning depends upon the environment. If the environment is rich for the learning child will learn more and easily. For example, a child lives in a jungle his learning will be different from the child living in a village.

A child is people who can learn according to his/her own interests. (John Dewey)
It is necessary to discover our image because to reflect out teaching methods.

Some facts about child Development

- At birth, a baby's brain already has 100,000,000,000 cells. This is about the same number of stars in the Milky Way. It is very interesting fact.
- Unlike the rest of a new baby's body. The brain is not complete at birth. In order to start working, the cells need to communicate with each other.
- As a baby starts to experience life, connections are made between cells- the more connections are there, the more the brain can do. Brain development continues till the age of 8. Brain develop very fast in the first year after birth. The process slowdown in the later years.
- A baby's brain develops so fast that by age two a child who is developing normally has the same number of connections as an adult has. By the three, a child has TWICE as many brain connections as an adult.

Developmental milestones

Developmental milestones are set of functional skills or age-specific tasks that most children can do at a certain age range.
All children are unique they have their own developmental milestones. For example, some start waling very soon some take a lot of time.

Milestones in Early years

In this topic we will talk about the developmental milestones of 30-36 months child who is ready for pre schooling. In our government schools age for a child in first class is 4 years and in many private schools, age is of 3 years. There are no hard and fast rules. Some parents sent their children to school even before this age.

A 30 months old child who is in preschool can hold in mind a whole sequence of spatial maps and know where things are in their environment. For example, child knows the way to his classroom. He knows the address of his house. If there is a park near to his house, he can tell the way to it. If we want the intellectual development of the child, we must tell them to do their work on their own.

A preschool child of 36 months can now hold two different emotions in his mind at the same time, such as being sad that he spilled ice cream on his clothes but glad that he's at a birthday party.

General milestones in early childhood education

Gross motor:

It is using large group of muscles to sit, stand, walk, run, etc. keeping balance and changing positions. Development of these skills is very important in preschool or early childhood education. Its example is jumping exercises, stretching the arms. Its main purpose is to develop their muscles.

Fine motor:

It is about using hands to be able to eat, draw, dress, play, write and do many other things.

Cognitive:

Cognitive development is related to thinking kills including learning, understanding, problem solving, reasoning and remembering. Child learns language out of the need. Language is something which helps in development. Use of language is very important for thinking skills.

Language:

It is about speaking, using body language and gestures, communicating and understanding what others say. In preschool focus is on speaking.

Social:

Interacting with others, having relationships with family, friends and teachers, cooperating and responding to the feelings of the others.

In preschools our curriculum should not be subject oriented our focus must be to achieve these milestones.
In social development very important thing is sharing. Some children make friends very easily some cannot. It is all because of their opportunities in preschools.

Piaget's stages of cognitive development

- Sensorimotor
- Preoperational
- Concrete operational
- Formal operational

In the context of preschool, it includes two stages:

Sensorimotor stage

Preoperational stage

In our Pakistani schools we focus on only on the stage of **preoperational.**

Piaget's stages of Cognitive development

Stage	Age	Major Features
Sensorimotor	Birth to 2 years	Infants use their bodies to form cognitive structures.
Preoperational	2 to 7 years	Use of symbols, rapid language growth.
Concrete operational	7 to 11 years	Can reason about physical objects
Formal operational	11+ years	Abstract thinking leads to reasoning with symbols

Milestones for 4-year-old Children

Physical development

It includes gross motor and fine motor development.

A four years child can skip on one foot, can draw "Man", can cut with scissors (not well), can wash and dry face, can dress self except ties, can stand broad jump, can throw ball and a child can walk and run with high motor drive.

Cognitive and language development

A child who is 4 years old uses complete sentences, has 1540 words vocabulary, asks endless questions, learning to generalize, highly imaginative, dramatic, can draw recognizable simple objects.

Social development

- Cooperative
- Enjoys cooperative play
- Highly social
- May play loosely organized group games
- Emotional behaviour of four-year-old child
- A four years old child seems sure of himself. At time a four years old child show out of bounds behavior, often negative.
- We should give controlled freedom to four-year-old child.

Milestones for 5 years old child

Physical development

A five years old child hops and skips, dresses without help, has good balance and smoother muscle action, skates, rides wagon and scooter, print simple letters, handedness established, ties shoes and girls small muscle development is about 1 year ahead of boys.

Intellectual development

- Has almost vocabulary of 2,000 words.
- Tells long tables.
- Carries out directions well.
- Reads own name, counts to 10, asks endless different questions can do fiction-lying.

Social development

- Highly cooperative
- Has special "friends".

- Likes, enjoys simple table games.
- Observes school rules
- Feels pride in carrying out some responsibility.

Emotional Behaviors of 5 years old children

- Self-assured
- Stable
- Home centred
- Likes to associate with mother
- Capable, of some self-criticism

Lesson No. 24

EARLY YEARS EDUCATION

Objectives:

By the end of the lecture, you will have:

- Reflected upon the importance of knowing developmental milestones.
- Identified role of partnership education in early years.
- Reflected upon the use of play in early childhood education.
- Identified different kinds of play in ECE.

Outline:

- Pre-schooling
- The important things in pre-school education
- Pre-schooling research
- Importance of milestones
- Brain development milestones/ activities
    - Morning greeting
    - Finger-play in preschool
    - Story time
    - Free play
    - Snack and circle time activity
    - Art activity
    - Physical development milestones
        - Jumping
        - Finger play
        - Art activity
    - Social development milestones/ activities
        - Seating arrangement of class
        - Physical development
        - Snack & circle time activity

Pre-school and infant educations are different from other education. Child's rights convention of 1989 has mentioned that "Education is basic right of every child." It is a basic right of every child but it is usually considered as part of formal education. Different countries have different age levels of formal education i.e. some countries provide it at age 6, some at 7 or 8 etc. The age before formal education or proper schooling in which the child learns or gets basic education is known as early childhood education.

Pre-schooling:

The names that different countries use for pre-schooling or early childhood education is: -

- In British English, Nursery School or simply "nursery." - In the Unites States pre-school and pre-K are used.
- In Pakistan, there are different names to be used in private sector. i.e. Montessori education, kindergarten education, play group, toddler or kids' education etc.
- In public sector, the term mostly used is "Kachi Class"

The names may be different but umbrella term for it is "Early Childhood Education."

Developmental milestones of pre-school education are different from those of formal education.

The most important things in pre-school education:

- Physical development, in which cross motor development and fine motor development is included.
- Cognitive development, mathematics and language development can be part of it or it can be separated.
- Similarly, social and emotional development.

Pre-schooling research:

A study by Stanford University on 14,000 Kindergarteners revealed that while there is a temporary cognitive boost in pre-reading and math, pre-school holds detrimental effects on social development and cooperation.

Milestones in early years:

Here is a question, which will help in understanding.

By age 3 years, the average child can balance on each foot for how long?

a. **3 seconds**

b. **4 seconds** **Answer is: a**

c. **6 seconds**

d. **2 minutes**

At age 3 years, the average child can name how many colors?

a. **0**

b. **1** **Answer is: b**

c. **4**

d. **8**

By age 4 years, most children can ….

a. **Copy a square**

b. **Copy a circle** **Answer is: b**

c. **Copy a cross**

d. **Draw a person with 6 body parts**

What is learnt from the above questions?

If we are going to teach in early childhood school, what have we learnt?

Being a teacher, I need to know different milestones for early childhood education to:

1. **Plan age appropriate teaching and learning activities.**
2. **Carry out fair assessment of young children.**
3. **Give useful feedback to children and their parents.**
4. **Ensure holistic development of children.**

Being teachers, it is important for us to know early year milestones and we need to device our activities; teaching as well as learning activities according to those identified early year milestones.

Brain Development activities:

- **Morning greeting:** There are brain cells in the minds of the children, but the connection between these cells are missing. This morning greeting provides the environment which helps in building the connections. The important role in this regard is of language.

- **Finger play in pre-school:** By a couple of months of age, babies can process the emotional colors of language (prosody).

- In fact, toddlers can memorize nursery rhymes because rhymes have prosody. Finger play is important in developing connections in brain. As the preschool teacher raises her voice an octave draws out her vowels, the child's brain responds by sending even more chemical and electrical impulses across the synapses.

- **Story time** needs to be an integral part of early years of education. Because through story, a child gets language development, social development and social interaction.

- **Free play:** It is not necessary that every school follows teacher-oriented activities i.e. the teacher always tells a story. But a teacher must give the students free time so that they can do something in groups either they could play together. **Research says, "During free play, pre-school children interact with one another. As they communicate, whether through beginning language or more sophisticated use of words, the neurons in their brains are making more connections, critical for reinforcing learning."**

- **Snack & circle time activity:** This activity is important because the children can interact with one another more easily while having their snacks. Their social interaction is more at this time and most importantly, they learn sharing here; sharing of ideas in adult life comes only if someone experiences these things in early childhood. Sharing at early ages starts with little things e.g. snacks, toffees, chips, biscuits, lunch etc.

- If the children do not share these little things at early ages then they would not share their ideas in their future lives. So, snack time activity is very helpful in learning of vocabulary, sentence construction, and their social development.

- **Circle time activity:** As the early childhood teacher focuses her attention on each individual child in the large group activity, the child must think about the topic for the day. The child's brain will be active as she/he retrieves from memory something special.

- **Art activity:** Art is very important in early childhood education as it helps in brain development.

Physical Development Milestones:

- **Jumping:** A teacher must give the students the opportunity for jumping exercise. They are not jumping alone; there are other students as well. So, this activity is not only for physical development but social interaction as well.

- **Finger play:** When the students are learning rhymes, they must always be taught through actions. Its purpose is brain development and mortar development. When the children use their mortar muscles and fin muscles, as a result their mortar development takes place.

- **Art activities:** All art activities are part of physical development. Art should be an essential component in pre-school education because it is directly related to physical development.

Social Development Activities:

- **Seating arrangement of class:** Seating arrangement of a class should be in such a manner that the children can easily interact with one another and they could work together. They could share ideas.
- **Physical development:** Through physical development activities, the children gets social interaction as well.
- **Snack time & circle activity:** In snack time & circle activity, the children share their ideas with each other. So, it also results in social development.

Vygotsky's theory: Vygotsky's theory included four major ideas. They are:

1. Children construct their own knowledge.
2. Language plays an important role in cognitive development.
3. Learning can lead development.
4. Development cannot be separated from the social context in which it occurs.

It is very important for us to understand this theory and to use it in our teaching. Because this theory is very much applicable in early childhood education. Teachers must focus on language development. **Because learning can lead to development.** Teachers must focus on social context because social interaction is helpful in social development of the children. When social development takes place, then ultimately, children increase their vocabulary and language development.

Vygotsky's theory provides us with an integrated perspective that teachers must provide such opportunities to children in early childhood education which leads to language development. Language cannot be developed in isolation.

Lesson No. 25

BIG IDEAS AND CORE CONCEPTS

Objectives:

By the end of this session, you will have reflected upon:

- The importance of focusing on big ideas to design instruction
- The importance of generating Core concepts
- Using Core Concepts
- The importance of Generative Concepts
- Essential Questions

Outline:

- Rethinking Curriculum
- Information Processing Theory
- Core concepts
- Generating Core Concepts
- Generative topics
- Essential questions

Wiggin's and Mctighe's essential questions

Case of a Dedicated Teacher

Saima is a very dedicated teacher. She has been working as a Science teacher in elementary school for last 6 years. However, every year she struggles to finish the subject content.
This is not only Saima's problem but also many teachers want to ensure learning in class room and use different techniques also but their course is not covered.

What to be done by Saima?

Teachers get little assistance from textbook publishers who seem to simply add new concepts rather than reorganize content to effectively integrate new ideas with older ideas.
(Schmidt & McKnight, 1997)

The missing thing in are textbook is disorganized material. There is no integration between subjects or courses. All subjects are isolated. Because of these reasons' teachers are unable to cover the syllabus.

A brief survey was conducted in this regard and simple question was asked from 30 teachers.

The question and their response rates are given below:

Concern of 30 teachers from Lahore

What is your major concern regarding teaching?

A. To make children understand the concepts.

B. To cover the syllabus

C. Both A & B

D. Holistic learning of children regardless of time frame

24 teachers went for the choice "C" 6 chose option "D".

Teacher mostly concern about the completion of syllabus. Administrators, school heads and curriculum developers must help the teachers so that they must ensure learning and their syllabus is also covered.

Lesson Learnt

- Teachers want to teach in depth but want to cover the syllabus too.
- Few teachers are not concerned about time frame. They want to ensure holistic learning of children.

Is less really more?

US math textbooks include 175% more topics than do German textbooks and 350% more topics than do Japanese textbooks.
US Science textbooks cover 930% more topics than do German textbooks and 433% more topics than do Japanese textbooks
Yet both German and Japanese students outperform US students in math and Science achievements.
(Schmidt, McKnight & Raizen 1997)

In American books there is a lot of information than Japanese and German books. But Japanese and German students do well rather than American students. It is said that America is known for its higher education. But schooling is better in other countries.

Three Core Beliefs

1. More is better
2. Exposing students only to information contains minimal risk.
3. Most students learn quickly, and once learning has been demonstrated further practice is not necessary. **Dempster, 1993**

Rethinking Curriculum

Teachers are most important persons in the application of curriculum. Curriculum is a dead thing teacher's give life to it.

- A crowded curriculum makes distributed practice unlikely.
- Teachers must re-evaluate what they are teaching and attempting to cover.
- Less is more
- Deeper is better.

Information Processing Theory

1. Learners can learn only 5-9 chunks of information at a time.
2. Learner can process only about one new idea or concept every ten second.
3. But teachers generally expect more than this and textbook writers also include much more than this in books.
4. Result is that teacher cover material and student try, often in vain, to retain, understanding and using that material.

Bigger ideas are our assumptions and beliefs. We should think that what we are giving to our students ultimately rather than giving them a bundle of information. What are the skills we want to develop in our students?

Core concepts

- **Core concepts are declarative knowledge**.

They should be made quite clear to learners. Application in new level is important.

For example, we teach addition to the students at lower level and they use it in their latter life.

Another example is that some people who don't know about verb, adverb, noun and adjectives but they are able to write very good essays. It means the information we are giving is important in the context we are giving. In our schools the focus is on grammar. Students learn only definitions and give the paper of definitions. Our teachers do not focus on core concepts. Because of this reason even after the completion of BA students are unable to compose a single
letter.

Our students cannot interpret the short stories. Our students cannot summaries the novels. Reason is again that our focus is not on the core concepts in schools. We are seeing at the given picture and not focusing at the actual picture.

- **They are central to a domain of knowledge.**
- **Re likely to stand the test of time.**

The learning of core concepts is lifetime.

Generating core concepts

Its example is umbrella oenology. Our core concept is like big umbrella and there are small umbrellas under it. Small umbrella is contextual. It's another example is of addition. In small umbrella maybe we practice the students with two-digit addition, then teachers take them to complex addition it will be our medium umbrella, and our bigger umbrella is teaching of multiplication. When we are teaching to the students our focus must not be the simple addition but the multiplication. Just like this if you are teaching in the language class, you teach them the sentence structure not only that they can make the sentence but in long run they will be able to write the concepts. Small umbrellas are the steps to reach the big one. Another example is that if you are teaching social studies your ultimate goal is values. Core focus is that students can be able to internalize these values in their characters.

Generative Topics

1. **They are the topics which provide the opportunity to generate new information from what you have just learned.**
2. **They are issues themes concepts ideas which provide depth, significance and connections.**

Generative topics are generated from the leant information. Students and teachers both are interested in these topics. They are accessible and appropriate relevant. Generative topics actually make connections.

Examples of generative topics

1. Rain forests, Global warming, endangered species
2. Concept of zero, patterns symbols size and scale
3. Conflict, power
4. Humor, multiple perspective, interpreting texts, folktales

Teachers need to think big generative topics need to be essential in each subject.

Generative topics need to be interesting for the teachers as well as for students.

Essential Questions

There are a lot of ways in questioning. Questions must be like this in which students are compelled to think.

Wiggins and Mctighe's essential questions

1. Is there enough to go around (e.g. food, clothes, water)?
2. Does art reflect culture or shape it?
3. Are mathematical ideas inventions or discoveries?
4. What do we fear?
5. Who owns what and why?

One belief is that children should have analytical mind they must know how to think.

They must know problem solving. They should know how to argue. There is another thinking that if student have the analytical thinking and evaluative thinking, so there will not be any change on our societal level. The reason is that if the thinking process is in isolation, it can benefit the individual but not to the society. Analytical thinking and problem solving must be on societal level. For this, in Wiggin's view we should enable students to ask essential questions. These essential questions are as given above. In his thinking we need to develop our instruction and teaching under these questions. For example, if we are teaching the topic of global warming, we can extend it by the question what do we fear regarding to our environment? Another question is what do we own causing global

warming? Do remember that every individual has a role in controlling the global warming. We should not ignore these questions, because these essential questions bring change in societies. If we claim that teachers are the changing agents, then we need to address these questions.

And we also need to help our children to answer these questions or if not answering than at least thinking about these questions. These questions are based on Bloom's taxonomy, and are of higher level. These are collective questions and not for individuals and we can debate on them.

Lesson No. 26

ESSENTIAL QUESTIONS IN ADOLESCENT TEACHING

Outlines

- Objectives
- Characteristics of essential questions
- Essential questions
- Essential vs Unit question
- Adolescent brain changes
- What to teach and how to teach
- Integrated themes

Objectives

- Essential Questions
- How essential questions are different from Unit questions
- The way we learn, naturally.
- Integrated Themes

Characteristics of essential Questions

1. They go to the heart of a discipline: these questions are important as well as controversial.
2. Recur naturally throughout one's learning.
3. Raise other important questions.
4. Have no obvious right answer.
5. Are deliberately framed to provoke and sustain student interest.
6. Require divergent thinking.

When we talk about induction it means we are going from specific to generalization. We make some hypothesis, do experiments and reach on some specific result. We do not know about the answers of essential questions. Questions in induction also includes in essential questions.
Children need too think out of the box. The idea in divergent thinking is that no idea is a stupid idea. Children can come up with different ideas and teachers must accept all ideas.
Essential questions are related to the lives of people.

Essential Questions

Essential question is a conceptual commitment. Selection of a question is a decision of intent.

Teachers always identify their intent. Mainly concern of the teachers is to cover the syllabus on time. The ask questions which are given at the end of the lessons in the books. These questions are unit questions and not essential questions. Being effective and dedicated teachers, we should not be compromising on essential questions. Essential questions definitely ask for divergent thinking.

Essential vs Unit Questions

Essential Question	Unit Question
Must a story have a moral, hero and villain?	What is the moral of story? Who is the hero in the story?
Do we always mean what we say and say what we mean?	What are sarcasm, irony and satire? How do different genres help us in communicating without saying what we mean?
Who is a friend?	Are Pakistan and Iran good friends?

Essential questions are based on induction and unit questions are based on deduction. We need to keep balance between both types of questions.

Adolescent brain Changes

- Research has now determined that remarkable changes occur in the brain during the second decade of life.
- The understanding that adolescence is a time of profound brain growth and change is contrary to long-held ideas that the brain was mostly fully "formed" by the end of childhood.
- Like a computer, the maturing brain grows "circuits"-neural connections-that can perform several tasks simultaneously and with ever-greater efficiency.
- Dopamine inputs to the PFC-a chemical messenger critical for focusing attention when necessary to choose between conflicting options- grow dramatically during adolescence.

Children do not have attention span. Teenagers can focus on one topic for longer period of time. Dopamine is the chemical of attention which develops in teenagers.

- Neuroanatomical evidence suggests that learning and positive experiences help build complex, adaptive brains.
- By the end of adolescence, the human brain, the most complicated three-pound mass of matter in the known universe, contains over 10 billion neurons and another 100 billion support cells. The 10 billion neurons from over 100 trillion connections with each othermore than all of the internet connections in the world.
- The brain procedures a large number of neural connections just before puberty. These connections diminish in number throughout adolescence through a "use-it-or-lose-it" pruning, which leads to a leaner, more efficient brain.

If we will use the connections our efficiency of doing any task will increase. All children have same structures but their growth in different areas is different. Some children go in the field of medicine this is because the used their connections in this field. Children who do not go in the medicine they have those connection but as they are not developed, they diminish. So, it means

that if we use our connections they will progress. If we will not use them, they will automatically diminish.

- Because of pruning, it is very important that parents do not complete academic tasks that their children should be doing for themselves. A child's brain will prune – or lose – mental connections that it does not use. Therefore, it is important for pre-adolescents and adolescents to solve academic problems themselves. Problem-solving skills will increase in complexity with patience, and practice will strengthen neural connections.

Parents should let the children do their tasks on their own. It is common experience that poor children have more problem-solving skill than other children. Being teachers, we should allow children to solve the problems.

- Other dramatic changes occur within 10 to 15-year-old children as well. These changes impact all types of learning in the classroom and outside of it. Middle school students tend to be energetic, enthusiastic and filled with questions and ideas. However, they also can be disorganized, moody and filled with worry over the "smallest" slights.

At the age of adolescence children have hormonal as well as classroom changes. Because of these changes' children start learning very fast. Children also have mood swings. They can be very moody or disorganized inside or outside the classroom. They become angry on little things. This can be of any age. At this age mood swings are related to brain development.

So what to teach and how to teach

- **Problem solving**

We teach them reflecting so that they reflect and assess their performance. And make their action plans.

- **Improving own performance**
- **Team work**
- **Experience**
- **Practice**

These are all life skills; these are not tangible. Every person should learn these skills. If we will learn these skills in our adolescence it will be practically helpful in our future. Practice and experience are most important things to learn problem solving.
Experiences are unique to every individual. Teachers demonstrate some experience and children only observe. But observing is not the whole thing for learning. In our schools this is a big misconception. Its example is that we cannot learn to ride bicycle or driving a car only by observing.

Integrated themes.

Our life is integrated. Through integration it will be easier for the children to ask essential questions. We should encourage integration so that we can maximize the time. Being teachers, we must emphasis on integration. Primary school teacher should integrate two or three subjects so that we can save the time. We must tell the students that "Subjects are not isolated entities".

Lesson No. 27

BIG IDEAS & ESSENTIAL QUESTIONS

Outline

1. What are different kinds of integrated Themes?
2. Forms of integration (Fogarty & Stoehr's 1995)

Integration:

Integration means putting things together.

Definition of Integration:

"Only in education, never in the life of the farmer, sailor, merchant, physician or laboratory experimenter, does knowledge means primarily a store of information aloof from doing."

(JOHN DEWY)

John dewy says that there is no such profession where knowledge is separable from doing or practice. It is only education where knowledge is a set of information. We need to change this orientation and being teachers, we need to integrate knowledge with practical skills. If students do not get learning of skills, it means their knowledge is actually incomplete knowledge.

"The integrated curriculum is a great gift to experienced teachers. It's like getting a new pair of lenses that make teaching a lot more exciting and help us look forward into the next century. It is helping students take control of their own learning."

(M. MARKUS, 1991)

M. Markus's said that although integration is "putting things together" but it is very helpful for experienced teachers. They feel that he has provided them with extra pair of lenses and its benefit was that their teaching becomes exciting. Teaching is very exciting for young and new teachers because whenever we are going to do something new, so we are excited about that. But if we do the same task or things again and again, it becomes part of our routine. But through integration, teaching becomes excited of the experienced teachers.

There should be the reasons for integration or putting things together and there should be very thin boundaries between different disciplines.

Why integration?

- **Disconnection breeds apathy while integration thrives on connections.**

- **Integrated learning more accurately approximates the lives of human beings when they are not in schools.** We are spending a very integrated life as well. Because we are connected with different shops, milkman, sweepers, different professions etc. There are no disconnections or disintegration in that. But when we are going to school, there everything is fragmented, there is no integration. There is a lot of isolation of concepts and compartmentalization of subjects.

What is integration?

- **Integration does not mean two teachers teaching their subjects simultaneously in one classroom.** If two teachers are teaching a same concept in a class, we cannot say that it is an integrated teaching. More appropriate term for this matter is 'team teaching.' Team teaching is a very good teaching strategy but one must not be confused with integration.

- **A fully integrated curriculum combines disciplines in a synergistic manner that makes the knowledge of one subject inseparable from that of another subject, with division occurring only in the teaching of sophisticated content or vocabulary.** You cannot fully understand content of one subject if you are going to separate it from the other subject. E.g. you cannot learn physic concepts or content unless you learn mathematics. Similarly, in chemistry, mathematics and some physics is involved. Language is very important because it is a tool for different subjects. You cannot learn chemistry in isolation; it needs to be there in a certain language.

Why teachers should teach in integration?

First reason is that we are living in the age of information technology. The knowledge in this age of information technology is increasing exponentially. We are living in 21st century but the structure of our schools is of 20th or even of 19th century, where there is a specific timetable, in which the teachers have to teach everything to the students. Today, the only way to teach the students is of integration because through integration you can save your time and learning of the students will be contextualized.

We give the students information about a concept and they memorize it. But they are never able to use that information. So, Teachers need to integrate knowledge with skills and attitudes. At

the same time, we need to integrate different subjects in a way that knowledge of one subject comes inseparable from the other subject.

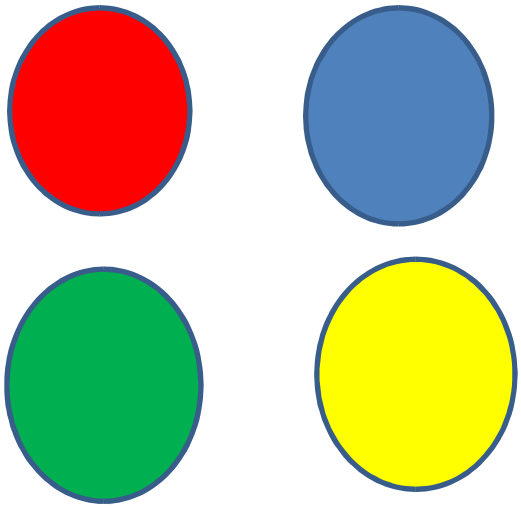
10 different methodologies of integration:

Fogarty and Stoehr's (1995) ten views for integrating curriculum are the most frequently used planning models in the field. These methods are actually modelling of integration.

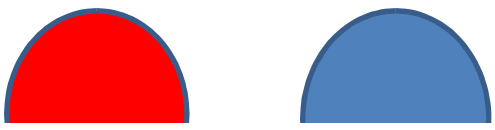
These 10 methodologies are divided into three forms.

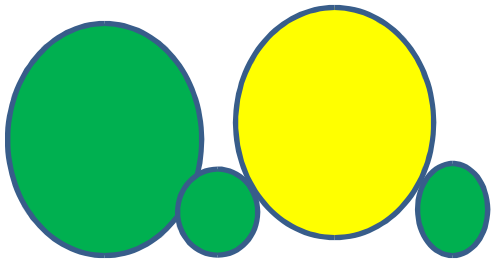
Form- 1 – Fragmentation:

When a teacher list or rank topics, concepts and skills to systematically organize curricular priorities within each subject.



The above are four circles which are associated with different subjects. There is no connection in them. They are all different. They are together but not connected. These four subjects are taught in a school timetable but at different times. So, if these four are not connected then how fragmentation is a type of integration? Fragmentation is said to be the very primary level of integration. This integration is done **when a teacher list or rank topics, concepts and skills to systematically organize curricular priorities within each subject.** Now a teacher is going to teach a lesson to the students, he has to decide which lesson should be taught before it. What are the prerequisites of a lesson, and what to teach after this lesson? So, we can say that a lesson has the integration with the previous lesson and the upcoming lesson. A teacher must integrate knowledge and skills.



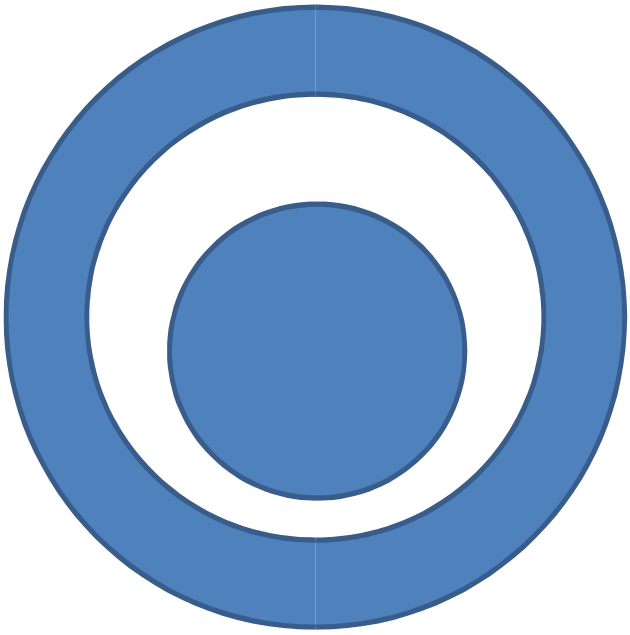


Form – 1 – Connection:

A connected methodology focuses on the details, subtitles, and interconnections within an individual discipline. Teachers help students make connections by explicitly making linkages between subject topics, skills, and concepts. Connection is a bit advance level from that of fragmentation.

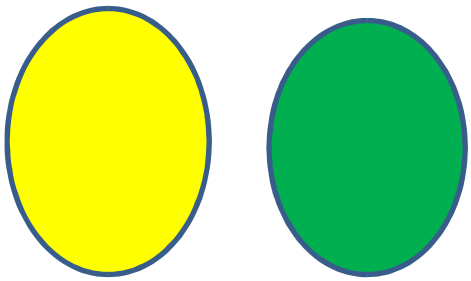
Form – 1 – Nested:

Nested integration takes advantage of natural combinations. Integration is performed by overtly making connections or creating combinations. This could be accomplished in a lesson on the circulatory system by having the lesson focus on both the circulatory system and the concept of system.



Form- 2 – Sequenced integration:

- **Topics and units are taught independently, but they are arranged and sequenced to provide a framework for related concepts.**
- **Teachers arrange topics so that similar units articulate. For example, graphing units can coincide with data collection in a weather unit.**



There are two subjects with colors green and yellow, they are with each other but not connected. They are fragmented but sequenced. Sequenced integration is where different subjects or disciplines are sequenced in the timetable. There is no overlapping but similar topics are taught together. So, these two subjects are not linked with each other but they are being taught at the same time.

An important thing about sequenced integration was said by John Adams is:

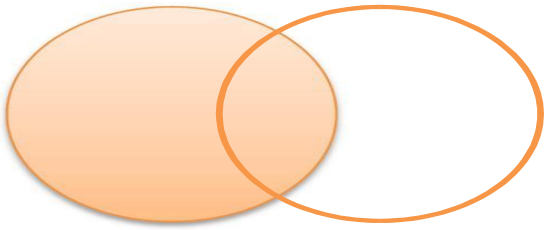
"The textbook is not a moral contract that teachers are obliged to teach … teachers are obliged to teach [students]."

(JOHN ADAMS)

The major concern of our teachers is to cover the syllabus, which means the textbook provided to them must be taught completely to the students. But john Adams says that actually textbook is not a moral contract that a teacher needs to carry out or obliged to teach. Teachers are not there to provide students with a set of information but to teach them.

Form – 2 – Shared integration:

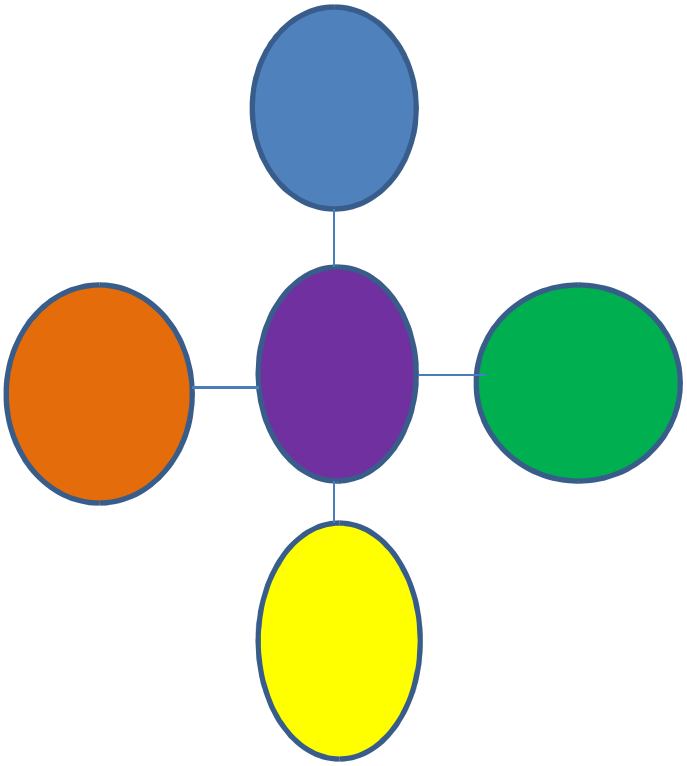
- **The shared model brings two distinct disciplines together into a single focus. The shared methodology overlaps concepts as the organizer.**
- **The teachers of the two disciplines plan their teaching, which will take place in the individual classes together.**



One subject is overlapping on the other in this integration. This teaching is not done by a single teacher. E.g. one teacher is of physics and the other is of mathematics. They will plan their teaching in a combined way but teach in individual classes. The aims of two teachers are same but their subjects are different. It is not team teaching but a shared integration.

Form – 2 Webbed:

There are different subjects which are linked together as shown in the diagram below:



- **Webbed curricula commonly use a thematic approach to integrate subject matter. Broad themes such as change, cultures, discovery, environments, interactions, and work provide a greater opportunity for teachers of various disciplines to find common topics, concepts and skills.**

  For example:

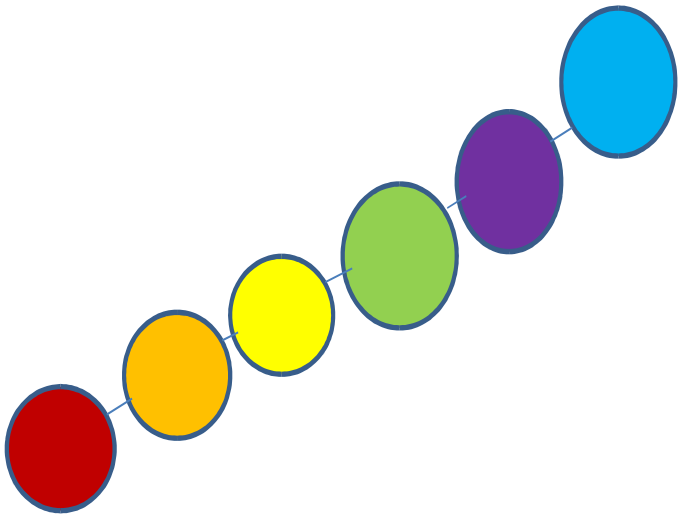
Concepts	**Topics**	**Categories**
Change	Community	Adventure
Culture	Partnership	Biographies
Discovery	Relationship	Medieval times
Freedom	Society	Science fiction

One could not understand the concept of culture unless he/ she understand the concept of change. They all are interconnected with each other. All the concepts must be presented in a

webbed way, when it is done, a teacher will be able to teach those concepts in a much better way.

Form- 2 Threaded integration:

- **The threaded approach to integration is a meta-curricular approach where big ideas are enlarged. This methodology threads thinking skills, social skills, study skills, graphic organizers, technology and multiple intelligences approach to thinking throughout all disciplines.**



Here a teacher needs to know what are the skills needed to be taught to students in science, mathematics, English etc. Then a teacher needs to identify the common skills in all these subjects. Those common skills must be taught in integrated way.

Form 2 – Integrated:

- **This process blends the disciplines by finding overlapping skills, concepts and attitudes found across the disciplines. Much like the shared methodology, integration is the result of shifting related ideas out of the subject matter content.**



Form 2 provides us with more integration than form 1.

Form 3 – Immersed integration:

It means that different disciplines are immersed under a certain umbrella.

- **The immersed methodology focuses all curricular content on interest and expertise. With this methodology, integration takes place within the learners, with little or no outside intervention. Immersed learners continually make connections between their chosen topic of interest and subjects.**

  Do remember, a teacher is going to integrate the lessons with child's interest. It is not a subject specified integration but it is integration of teaching content with child's interest.

Form 3 – Networked integration:

- **The network methodology is totally student-centered. It professes that only the learner can direct the integration process. The methodology professes that the learner knows their topic and can self-direct their focus on the necessary resources both within and across subject areas.**

- **Networked are created between the learners.**

  Form 3 focuses on the integration of subject knowledge or content with children's interest.

Lesson No.28

INTEGRATED THEMES

Objectives:

We have talked about:

- Reasons for integration.
- Planning integrated units.
- Integrated project.

Ten reasons to teach an integrated curriculum.

1. Unless you have 50 hours a day to teach, you will never get it all in. We cannot teach the subjects to the students in isolation. We do not have enough time to teach the students a single subject. So, we have to integrate different subject.
2. An integrated curriculum allows science and social studies to frame your reading, writing and math. We can teach students writing, grammar, descriptive writings, argumentative essays through social studies and science instead of English and Urdu. There should be good integration not overlapping.
3. The brain thrives on connections. We observe a lot of things in this world. But we try to reflect at the end of the day we can remember only a few things. We can remember those things which are connected with our prior learning. Our mind works on connection. Our mind cannot capture the information without connections. Human mind can hold 5 to 9 isolated chunks of information. But more information can be saved in our mind through integration. Integration is very important within the subject or with different subjects.
4. Life is not divided into neat little blocks of time called science, math, reading, writing, social studies and history. We do not teach interpersonal skills in schools. We need to re think our approach. Because life is not divided into little blocks of subjects.
5. Problem solving skills soar when all of our knowledge and higher-level thinking from all curriculum areas are tapped. We do not know problem solving skill because we do not practice it. It is the need of every subject. Our problem-solving skills decrease with the passage of time.
6. Real literature in real books provides an authentic diving board into learning all subjects. Award winning literature provides models for problem solving, peer relationships, character development, and skill building as students are captivated by exciting adventures with realistic characters who go through problems very much like their own problems. Case method is a very good approach to know problem solving. It is the integration of skills.
7. School's got it backwards. In real life you are tested with a problem and then must scramble for answers, but in traditional schools you are given the answers and asked to… repeat them.

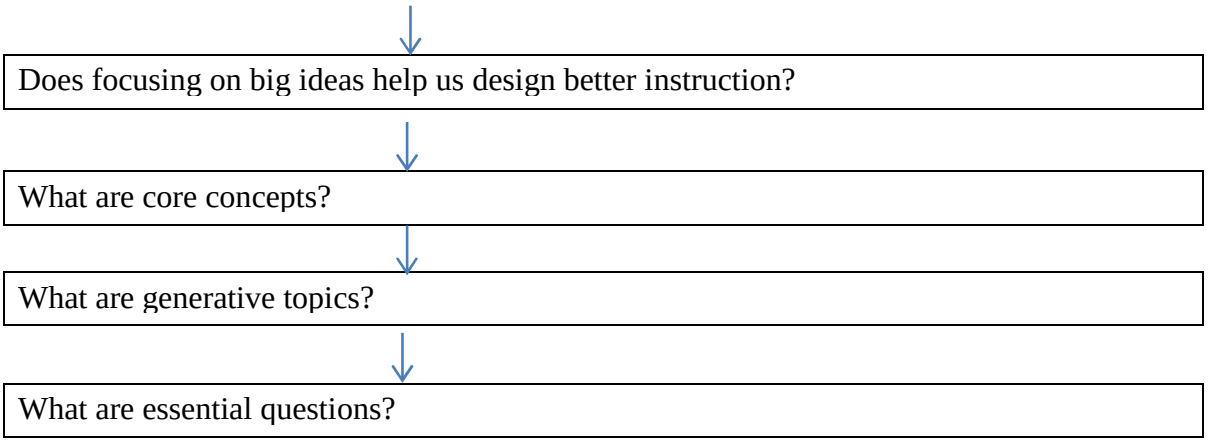
Children are very good problem solvers. Schools got it backward. In schools we do not provide the opportunities to the students to show their capacities.

8. Group interaction and team building inherent in an integrated curriculum depend on using various strengths and skills to create bridges to understanding. Team work is very important but we never get an opportunity to learn this skill. We do not know how to share. Because we do not teach this to our students. We only want to give them a lot of information. And the most important things group learning and team work is always ignored. When we make the groups of students of same interest. They will learn to work with a group with different people. Integration is not only the integration of knowledge but at the same time integration of content, skills and attitudes. We do not teach the negotiation skills. It is a common observation that we have a lot of intelligent people around us who can talk on every topic but they are not able to present an argument. When they argue it seems that they are confronting others? Because these things are not in practice in our schools.
9. Your standardized test scores will hit the top. By inspiring students to think, to love learning, and put their learning to work in authentic ways, your kids will be equipped for whatever curves they might be thrown…on standardized tests and in life. We emphasis on the marks of the students that's the achievement. A lot of marks are not the guarantee of job or of a good life. Enjoying the learning is the most important thing. A child who enjoys his learning, improves his communication skills knows how to solve the problem is more successful than the child who only learns the content and get full marks in the examination. He has the skill for lifelong learning. The child who learns social skills can communicate with anybody and solve every kind of problems.
10. Students love an integrated curriculum and thrive on its challenges. This is the least important reason. Children love integrated curriculum because it provides the context for learning.

The Little Red Schoolhouse.2002

Getting to the Core Concepts

Core concept: Less is more.



A lot of information is not important depth of information is important. In school we do not have much time to deliver information so we must know the core concept. Which we want to deliver too the students. Generative topics are those which are linked with core concepts. And at the last there are essential questions. This thing is important before integration of the subjects or lesson.

Designing an Integrated curriculum unit.

Step 1. Identifying learning goals

1. List 5-15 learning goals, concepts, objectives, competencies or outcomes for your particular discipline or course(s).
2. Creating learning goals maps: Draw a two-column grid on the paper. Enter subject title in the left column and the corresponding learning goals in the right column.
3. Share learning goals with teachers.

Step 2. Identifying Generative theme

1. Identifying generative themes.

Generative themes

- Are the focal point of the integrated unit.
- Cut cross disciplines and may be addressed from a variety of disciplinary perspectives.
- Link with students' interests.
- Lend themselves to student investigation and projects.
- Link with community issues and needs.

Sample generative themes

- The Environment: Love it or lose it?
- The Two-Edged Sword of Technology.

Next on step 2

- Brainstorm and Agree on a Generative Theme and Sub-Themes.
- Establish "Essential Questions"
- Planning Backward: Set Goals and Objectives.

It may look like:

At the completion of the integrated unit, participants will be able to propose some solutions to the problem.

Step 3. Decide on the Activities, Diagrams and Timeline.

There will be teaching as well as learning activities. Then there will be time frame to do these activated. Then there will be assessment system.
The most important part of integration is assessment. We have listed 5 to 15 goals and we have to assess the student against all the listed objectives. We have to assess the students learning across those objectives. We need to use multiple strategies. We cannot assess the students on paper and pencil. It can assess their cognition but we cannot observe their performance. We need to identify assessment strategies and assessment tools very carefully while integrating t6he subjects.
Step 4. Assessment of the integrated unit.

Sample integrated unit

Century week celebration (Project)

This project was done in America. Their core concept was development.

Generative topic: Forces

Essential question

What forces shaped the twentieth century?

Topic (forces):

Popular culture; mass media; science and the environment; medicine, health and nutrition; politics, government and economics; war and peace; transportation; communication; arts, family and society.
The project was done with 8th grade students and they were 51. The most important thing of the project was that all the colleagues made this project with mutual cooperation. They all decided that there will not be any class in the whole week rather we will celebrate century week.
Steps

1. The first task was to confirm the choice of forces.
2. The 51 students were divided into 10 groups.
3. Each of the 5 students in the group was assigned a 20-year time period and a specific force to study.
4. The cooperative groups jig sawed into groups of 10 to plan and make a presentation of the forces that guided each of the 20-year periods of the century.
5. Each team of teacher wrote guiding questions for each force using the core concept and essential question as their guide.
6. Teachers designed assignments to helps facilitate the learning process and a variety of authentic assessments were implemented.
7. Students were asked to rate the forces they preferred to study.
8. Then they asked to name a few students with whom they would like to work.

9. After that the teachers assigned students to groups and created booklets for the students.
10. That booklet included general schedule, group roster, guiding questions, assignments and assessment rubrics.
11. The seven-day schedule began on day 1 and 2 with a PBS film introducing the twentieth century.
12. A keynote speaker.

In this way the students are learning problem solving. Communication skills, team work, interpersonal communication. The important thing in jigsaw reading is what we know we must share it with others. We cannot share unless we have communication skills. In this big project all subjects were integrated.

The other method that is very often used to teach integrated curriculum was inquiry method or inquiry learning.

Lesson No.29

INQUIRY TEACHING AND HIGHER-LEVEL THINKING

Objectives:

- **Thinking skills**
- **Critical thinking**
- **Strategies to develop critical thinking**
- **Inquiry learning and critical thinking**

Before talking about thinking, we must know what actually learning is?

What is learning?

- Is it memorizing facts?
- Is it understanding concepts?
- Is it acquiring skills?
- Is it all above?

In behaviourism, learning is defined as a permanent change in behaviour. In schools, most of the teachers assume that memorizing a book is **learning,** but actually, it is rote memorization. Some teachers assume that a good learning is that in which students understand the depth of concepts.

- According to **Kolb (1984),** Learning is a process of a combination of grasping experience and transforming it.

Thinking skills:

- **Robinson** notes that while the importance of cognitive development has become widespread, students' performance on measures of higher-order thinking ability has displayed a critical need for students to develop the skills and attitudes of effective thinking.

Glossary of Thinking skills terms:

Critical Thinking: The process of determining the authenticity, accuracy, or value of something; characterized by the ability to seek reasons and alternatives, perceive the total situation, and change one's view based on evidence. Also called "logical" thinking and "analytical" thinking.

Infusion: The process of planning, assessing and monitoring one's own thinking; the pinnacle of mental functioning. This term is used for correction and higher order thinking skills. Infusion is more about disposition.

Metacognition: The set of basic and advanced skills and sub-skills that govern a person's mental processes. These skills consist of knowledge, dispositions, and cognitive and metacognitive operations.
Transfer: The ability to apply thinking skills taught separately to any subject.

Bloom's taxonomy: It is set of different skills. It has six levels from knowledge to evaluation.

Some are lower level thinking skills while others are higher order.

De Bono Six Thinking Hats: The term *Six Thinking Hats* is used to describe the tool for group discussion and individual thinking. "Six Thinking Hats" and the associated idea parallel thinking provide a means for groups to plan thinking processes in a detailed and cohesive way, and in doing so to think together more effectively.

The Six Thinking Hats (or modes)



The White Hat

The White Hat calls for information known or needed.



The Red Hat

The Red Hat signifies feelings, hunches and intuition.



The Black Hat

The Black Hat is judgment -- the devil's advocate or why something may not work.



The Yellow Hat

The Yellow Hat symbolizes brightness and optimism.



The Green Hat

The Green Hat focuses on creativity: the possibilities, alternatives and new ideas.



The Blue Hat

The Blue Hat is used to manage the thinking process.

How these thinking skills can be incorporated in our classrooms?

We must change our assumptions first, that is "the more a teacher teaches, the more a student learns." This assumption can be changed by thinking that "the more a student experiences, the more he learns" or "deeper is more." There are different methods for deeper learning e.g.
generative topics, core concepts and more important we need to focus on big ideas.

Critical thinking:

- What it isn't: Critical thinking is not necessarily being "critical" and negative. In fact, a more accurate term would be evaluating thinking.
- According to Robert, "critical thinking is a disciplined manner of thought that a person uses to assess the validity of something: a statement, news story, argument, research."
- Beyer says that "critical thinking has two important dimensions: it is both a frame of mind and a number of specific mental operations." Firstly, you should have evaluative thinking, you could not evaluate a thing, unless you have evidence.
- Norris (1985) agrees, stating that: Having a critical spirit is as important as thinking critically.
- The critical spirit requires one to think critically about all aspects of life, to think critically about one's own thinking, and to act on the basis of what one has considered when using critical thinking skills.

Teaching Critical Thinking:

There are number of ways to develop critical thinking skills among students.

- Acting like a teacher
- Students as questioners
- Critical reading
    1. While reading activities
    2. Children's literature

3. According to research, children's literature is another powerful tool for teaching skills. Somers and Worthington (1979) noted that "… literature offers children more opportunities than any other area of the curriculum to consider ideas, values and ethical questions." Furthermore, literature that inspires and challenges helps students learn how to engage and interact with a book.

- Writing to learn
- Free writing
- Controlled writing
- Classification games for young learners
- Thinking games
- Finding problems
- Proposing appropriate solutions
- Riddles

A riddle for reading and critical thinking:

> This is an unusual paragraph. I'm curious as to just how quickly you can find out what is so unusual about it. It looks so ordinary and plain as you would think nothing was wrong with it. In fact, nothing is wrong with it! It is highly unusual though. Study it and think about it, but you still may not find anything odd. But if you work at it a bit, you might find out. Try to find out the unusual thing in the paragraph quickly.

Answer: "E" is the vowel, which is most frequently used in our writing. But in this paragraph, there is no "E"**.** Although it is interesting for a child. He will not only read the paragraph but his critical thinking will also be improved.

Inquiry Learning:

Inquiry itself is a big discipline. It has its own place in education and constructivism. Inquiry is actually investigation and it starts with questioning. Inquiry learning actually includes all the three elements of dale's cone of learning. These three elements help to determine the level of critical thinking skills among students.

Dale's Cone of Learning:

- Learning through doing, through observation, and through abstraction. Dale claims that, by directly participating in the learning process, students are more motivated and take greater interest in learning. (Abstraction is very higher level of learning.)
- If children are to develop higher-level abstract knowledge and so grasp the significance of abstract descriptions of concrete things, they should be provided with opportunities to use their senses to learn from empirical observation.

Lesson No.30

INQUIRY PROCESSES AND CONSTRUCTIVISM

Objectives:

- Bruner's stages
- Inquiry
- Five whys of inquiry
- Basic elements of inquiry teaching
- Inquiry processes
- Constructivism and inquiry teaching

Bruner's stages

Bruner's work was very much influenced by Piaget's work. He made the stages like Piaget but his later work was much influenced by Vygotsky. Under both influences he devised three stages.

- **The first stage he termed "Enactive", when a person learns about the world through actions on physical objects and the outcomes of these actions.**

In this stage child makes relationships with concrete objects and learns from them.

- **The second stage was called "Iconic" where learning can be obtained through using models and pictures.**

In preschools pictures and model are not sufficient way of learning. This is the stage when child makes relationships with real objects and want to learn. If a child has not seen a table, he cannot comprehend the table only with the picture. It will be a superficial learning and not the learning in depth. Pictures will be beneficial only when a child has seen something in reality or he has seen the original thing. If we want to show the animals to the students, we must take them to the zoo. After a visit to the zoo when we show them the pictures of animals it will be easy to understand for them. If we only show them the pictures, they can memorize the names but can no take the proper image.

The final stage was "Symbolic" in which the learner develops the capacity to think in abstract terms.

In this stage child can think abstractly. Algebra starts from grade six. It does not offer in earlier classes because the main reason is that its expressions are abstract. Small children cannot learn this.

Bruner did not clearly divide these stages he kept them merged. Importance of Bruner's stages according to constructivism is that lesson plan should be according to the stages of children. If the

child is on first stage teacher must teach them through concrete objects. If they are on second stage teacher can teach them through models and pictures. And if they are on the last stage teachers must give them abstract ideas. If the teacher is giving concrete objects to the children at the last stage it will waste their time and also the students will lose their interest in learning. Its small example is that children in playgroup love to do colouring but when he learns how to write, his interest in colouring becomes less.

The capacity of colouring of a playgroup child and grade one child is the same because when child gets his expertise in writing, his colouring development stops there. Child loves to do the tasks on his own. The main quality of constructivism is that it demands from the teachers to plan activities according to the interests of children. When we talk about this that the child loves to work on his own it is directly linked with Inquiry method. When children destroy the toys they actually want to inquire. Children ask a lot of questions it is also linked with inquiry. Basically, a child is an inquirer.

Inquiry

May involve a:

- **Problem**
- **Procedure and**
- **Solution**

It may happen that all three things are involved in an inquiry. In all above three topics question is the most important thing.

Five whys in inquiry.

What are the five whys? Its example is that the techniques most used for this is "the five whys" when giving students scaffolding guidance.

Why is the bread burnt?

Perhaps the dough was too close to the heat source at the top of the oven.

Why was the dough too close to the heat source at the top? Maybe the dough is too big.

Inquiry is not yet completed. It's just like that the police investigate. A lot of questioning is the necessary thing for inquiry.

The next questions for the above example are:

Why is the dough too big?

Probably because we did not measure it when we made it.

Why did not you measure it?

Because we only measure the size of the finished product.

So why did the bread burn?

If we do not take into consideration the fact that the dough will rise in the oven, it becomes bigger than the expected and might be burnt.

In inquiry the question must be based on the previous answer. The last answer will be different from the first one. That will be the conclusion. First one was the simple answer and last answer was given after inquiry. After inquiry we reach to a conclusion. In inquiry method every question must be inter linked.

Basic elements of inquiry teaching

1. Inquiry method requires the learner to develop various processes associated with inquiry. Processes which are involved in inquiry are interpretation, making conclusions, data collection, doing and observation. Children need to master all these processes.
2. Teachers and principals must support the concept of inquiry teaching and learn how to adapt their own teaching and administrative styles to the concepts. In our schools it is necessary to introduce inquiry learning. It can be happening when teachers will know that actual learning can be gained through inquiry method. We should not stuff the children with facts and information rather we must make them independent and critical learners.

   For this purpose, we must learn inquiry methods and must implement them.
3. Students at all ages and levels have a genuine interest in discovering something new or in providing solutions or alternatives to unsolved questions or problems. Research says that we are learning beings.
4. The solutions, alternatives or responses provided by learners are not found in textbooks. Students use reference material and textbooks during inquiry lessons just as a scientist and professionals use books, articles and reference to conduct their work.
5. The objective of inquiry teaching is often as process, in many instances, the end product of an inquiry activity is relatively unimportant compare to the processes used to create it. Maybe the child comes up with the ideas that are present in many ways and there is nothing new. End product is not important but the child has passed through every step included observation. Data collection, data interpretation and conclusion are the main thing. Objective of inquiry method is process and not the end product.
6. All conclusions must be considered relative or tentative, not final. Students must learn to modify their conclusions as new data are discovered. We need to develop flexibility in the children through inquiry. So, inquiry teaching develops the spirit of learning.
7. Inquiry learning cannot be gauged by the clock. In the real world, when people think or create, it is not usually done in fifty-minute increments. The effect of inquiry method is life-long. Inquiry method cannot be done in 30 minutes. It needs plenty of time.
8. Learners are responsible for planning, conducting and evaluating their own efforts. It is essential that the teacher play only a supportive role, not an active one (that is, the teacher

should not do the work for the students). We need to active the students and teacher must only support them.

9. Students have to be taught the processes associated with inquiry learning in a systematic manner.

   Every time a "teachable moment" arrives, the teacher should capitalize on it to further the building of inquiry processes. If the teacher himself give the answer of the question so he will not allow the next inquiry task.

10. Inquiry learning complicates and expands the teacher's work, owing to the many interactions that may originate from inquiry teaching and learning.

    Different children have different responses. Teachers have to tackle all the responses and build the learning on their responses. Inquiry is itself a process but teacher guidance is the most important thing in it.

Basic inquiry processes.

1. **Observing**

   Identifying objects, object properties and changes in various systems; making controlled observations; ordering series of observations. We actually learn from observation. Observation leads to questions and learning. Observation can be controlled or free. Controlled observation is the observation in which we are specific about the things we are observation. In free observation we observe everything in our surrounding. Both types of observation are important.

   In inductive mode there is free observation. It can be controlled. In deductive mode there is controlled observation.

2. **Classifying**

   Making simple and complex classifications; tabulating and coding observations.

   We can do these preschool children also.

3. **Inferring**

   Drawing conclusions based on observations; constructing solutions to test these conclusions.

4. **Using numbers**

   Identifying sets and their numbers and then progressing to higher mathematical processes.

   Its example is labelling.

5. **Measuring**

   Identifying and ordering lengths and then areas, volume, weights, temperature and speeds.

6. **Using space-time relationships**

   Identifying movements and direction; learning rules governing change in position.

7. **Communicating**

   Communicating graphs and diagrams to describe simple and then more complex phenomena; presenting written and oral reports.

8. **Predicting**

   Interpolating and extrapolating from data; formulating methods for testing predictions.

9. **Making operational definition**

   Distinguish between operational and non-operational definitions; constructing operational definitions for new problems.

10. **Formulating hypotheses.**

    Distinguish hypotheses from inferences, observations and predictions; constructing and testing hypotheses.
    A hypothesis is a tentative answer to every problem.

11. **Interpreting data**

    Describing data and inferences based on them; constructing equations to represent data; relating data to hypotheses; making generalizations supported by experimental findings.
    We must know how to communicate our data and interpret the data.

12. **Experimenting**

    Interpreting account of scientific experiments; stating problems' conducting hypotheses; conducting experimental procedures.
    We need to ensure that all these twelve processes are integrated in our task so that student learn and benefit from them.

Relationship between constructivism and inquiry teaching

1. The focus is on the students.
2. The pace of instruction is flexible, not fixed.
3. Students are encouraged to search for implications.
4. Students are encouraged to generate multiple conclusions.

Lesson No.31

GUIDED INDUCTIVE INQUIRY

Objectives:

- What should be done by teachers?
- Reinforcement of the concept of inquiry.
- Aspects of Inquiry
- Assimilation in Inquiry
- Guided Inductive Inquiry
- General model of Guided Inductive Inquiry

What should we do as teachers?

A teacher should try to do the following in class:

- **Focus on big ideas to design instruction.** (We should not worry if we will be able to teach a certain topic in a given time frame. So we should focus on big ideas. We should know about the content of the lesson to be taught and what are our expectations from the students regarding their learning. Teachers must know about the skills that are to be developed among their students.)
- **Generate core concepts.** (Those concepts should be generated in the class which gave birth to certain other concepts. Teachers are not supposed to teach dead concepts rather teach the concepts by which students can explore other concepts for further studies.)
- **Use core and generative concepts to ensure students' understanding.**
- **Ask essential questions which are definitely different from unit questions**. (Essential questions are different from unit questions, unit questions are very technical questions, and they address only a particular content. While essential questions are those which actually widens students' thinking and aims at developing students' thinking skills.)
- **Plan age appropriate tasks for different levels.**
- **Use different models of integration to develop deeper understanding and cater for students' interests.**
- **Apply inquiry teaching to develop higher level thinking.**

Why inquiry?

We know that inquiry is not about memorizing facts. Inquiry is about investigating things. Why is it important to teach students through inquiry? Because,

- Memorizing facts and information is not the most important skill in today's world. Facts change and information is readily available – what's needed is an understanding of how to get and make sense of the mass of the data.

Effective inquiry:

- Effective inquiry is more than just asking questions. A complex process is involved when individuals attempt to convert information and data into useful knowledge.

Application of Inquiry learning:

- Useful application of inquiry learning involves several factors: a context for question, a framework for questions, a focus for questions, and different levels of questions. Well-designed inquiry learning produced knowledge formation that can be widely applied.

Inquiry may involve:

- **Problem**
- **Procedure and**
- **Solution**

Aspects of Inquiry:

We often jump all aspects of inquiry together. However, each aspect of inquiry requires specific skills, resources and tools.

Inquiry could be of:

- Information
- Critical inquiry
- Scientific inquiry
- Graphic inquiry
- Historical
- Personal
- Media
- Social/Democratic

Above all are the different aspects of inquiry. Some of them involve only problem. Some of them involve problem and procedure and some involve problem, procedure as well as a solution. So inquiry has different aspects and we need to deal with inquiry accordingly.

Information Inquiry:

- Information inquiry involves the processes of searching for information and applying information to answer questions. We rise personally and questions that are addressed to us. Techniques for gaining meaningful information may involve reading, listening, viewing, observing, interviewing, surveying, testing and more.
- Information inquiry is very widely used in our school settings in which we ask the students to gather information.

The five interactive components of information inquiry are (Callison, 2006):

- Questioning
- Exploring
- Assimilation
- Inference
- Reflection

The most important component in information inquiry is assimilation because it brings change in our belief system.

Graphic/Visual Inquiry:

- Use historical drawings and painting to stimulate questions. (Students will observe the pictures and can acquire the following information through certain questioning.)
- Was this a real person or a myth?
- When did the event take place?
- Is the illustrator bias in some way?
- Is the image realistic or invented?
- How are these images alike and different?
- Which is most accurate?

Assimilation in inquiry:

- The process of assimilation involves reinforcing and confirming information that is known, altering thinking based on new information, or rejecting information that does not match the students' belief system.
- Assimilation leads to consideration of new options and points of view. (Callison, 2006, p.7)
- As students explore, look for unique aspects of at least 3 pieces of evidence and make comparisons.

Inductive Inquiry:

Inductive inquiry is of two types:

- Guided inductive inquiry
- Unguided inductive inquiry

Guided inductive inquiry:

Students investigate a teacher-presented question using student designed/selected procedures.

Unguided inductive inquiry:

Students investigate topic-related questions that are student formulated through student designed/selected procedures. When an activity is evaluated for its level of inquiry, a simple table establishing what is given to the learner determines at which level of inquiry the given activity resides.

For further reading about inquiry processes…

Inquiry Processes

1. *Observing.* Identifying objects, object properties, and changes in various systems; making controlled observations; ordering series of observations
2. *Classifying.* Making simple and complex classifications; tabulating and coding observations
3. *Inferring.* Drawing conclusions based on observations; constructing situations to test these conclusions
4. *Using numbers.* Identifying sets and their members and then progressing to higher mathematical processes
5. *Measuring.* Identifying and ordering lengths and then areas, volumes, weights, temperatures, and speeds
6. *Using space–time relationships.* Identifying movement and direction; learning rules governing changes in position
7. *Communicating.* Constructing graphs and diagrams to describe simple and then more complex phenomena; presenting written and oral reports
8. *Predicting.* Interpolating and extrapolating from data; formulating methods for testing predictions
9. *Making operational definitions.* Distinguishing between operational and non-operational definitions; constructing operational definitions for new problems
10. *Formulating hypotheses.* Distinguishing hypotheses from inferences, observations, and predictions; constructing and testing hypotheses

11. *Interpreting data.* Describing data and inferences based on them; constructing equations to represent data; relating data to hypotheses; making generalizations supported by experimental findings
12. *Controlling variables.* Identifying independent and dependent variables; conducting experiments; describing how variables are controlled
13. *Experimenting.* Interpreting accounts of scientific experiments; stating problems; constructing hypotheses; conducting experimental procedures

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Lesson No.32

MODELS AND CONSIDERATIONS IN GUIDED INDUCTIVE INQUIRY

An **inquiry** is any process that has the aim of augmenting knowledge, resolving doubt, or solving a problem. A theory of inquiry is an account of the various types of inquiry and a treatment of the ways that each type of inquiry achieves its aim.

Inquiry is not mere questioning; it is much more than that. Inquiry is not a theoretical technique only; it is very practical indeed.

Inquiry learning begins when students are presented with questions to be answered, problems to be solved, or a set of observations to be explained.

If the method is implemented effectively, the students should learn to "formulate good questions, identify and collect appropriate evidence, present results systematically, analyse and interpret results, formulate conclusions, and evaluate the worth and importance of those conclusions. Problem-based, learning, project-based learning, discovery learning, certain forms of case-based instruction, and student research.

Objectives:

- Steps for GII (Guided Inductive Inquiry)
- Model of GII
- Characteristics of GII

Steps for Guided Inductive Theory:

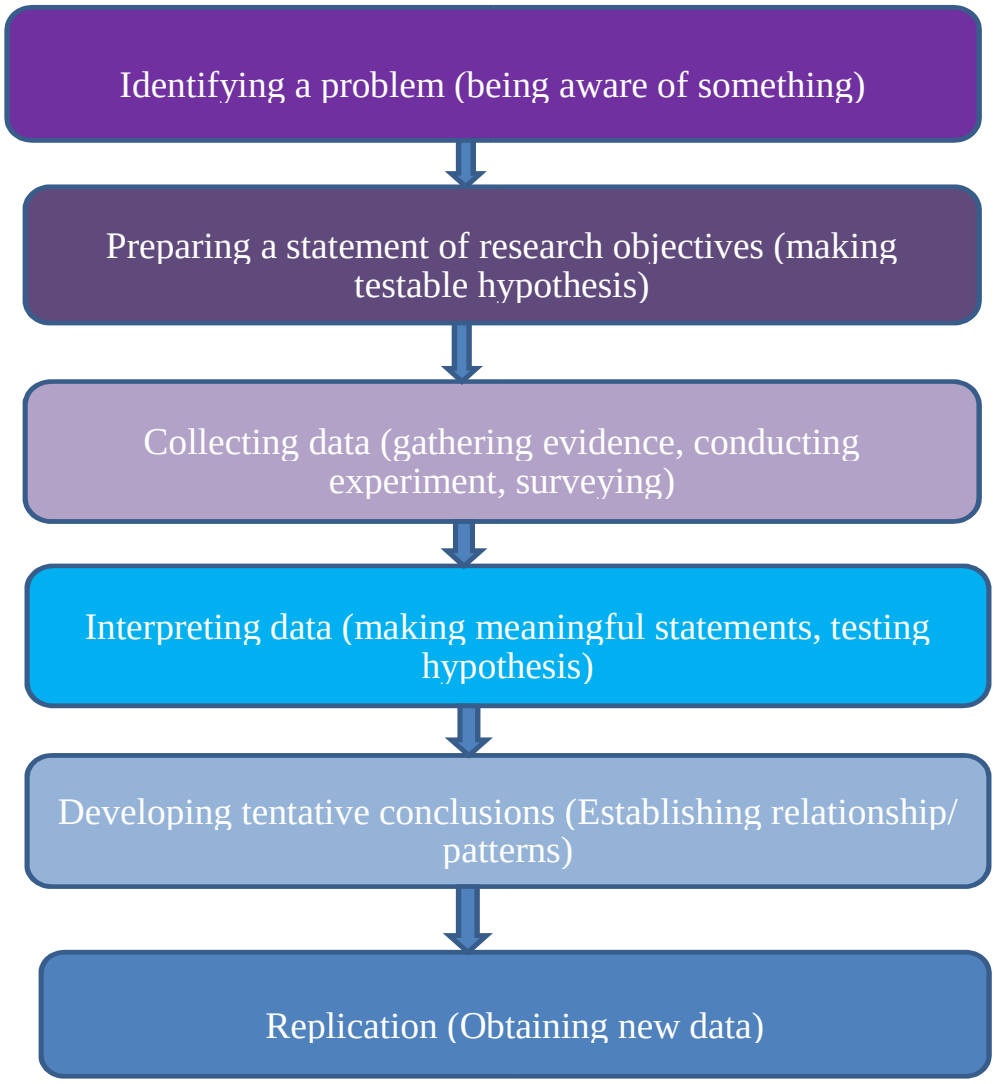
1. Decide on the generalization's students should make during a particular unit of study.
2. Organize the learning activities and materials to expose strands and generalizations to students.
3. Ask students to write summary of the content that will form basis of the generalizations.
4. Ask students to identify sequences or patterns of events, objects, or other data in the content.
5. Ask students to summarize these sequences or patterns in one sentence.
6. Ask students to offer proof that their statement is a generalization by applying it to other events, objects or data.

Example of steps for Guided Inductive Theory:

Steps	Examples:
1. Decide on the generalization(s) students should make during a particular unit of study	Humans need balanced diet to keep good health. Shortage of minerals can cause serious illness. Galileo was condemned by the inquisition because he questioned the accepted facts.
2. Organize the learning activities and materials to expose strands and generalizations to students.	Cases representing different diseases caused by imbalanced diet. Cases representing different diseases caused by shortage of minerals. Analysis of Galileo's work and the religious rule of that time.
3. Ask students to write summary of the content that will form basis of the generalizations.	Students summarize the read cases or texts.
4. Ask students to identify sequences or patterns of events, objects, or other data in the content.	
5. Ask students to summarize these sequences or patterns in one sentence	
6. Ask students to offer proof that their statement is a generalization	
7. By applying it to other events, objects or data.	

The most important thing in inquiry is evidence. You can never justify your statement without evidence. Above are the six steps that will be used whenever you are planning a guided learning inquiry.

A General Model of Guided learning Inquiry:



Characteristics of GII model:

1. Learners progress from specific observations to inferences or generalizations.
2. The objective is to learn (or reinforce) the process of examining events or objects and then arriving at an appropriate generalization from the observations.

3. The teacher controls the specifics of the lesson--- the events, data, materials etc.
4. Each student structures a meaningful pattern based on his or her observations and those of others in the class.
5. Classroom is a learning laboratory. Because knowledge is created here. The inferences and generalizations at the end of the inquiry are actually knowledge.
6. Usually a fixed number of generalizations will be elicited from the learners.
7. The teacher encourages participation of each child to ensure collaborative learning.

Inquiry method cannot be applied on specified students.

Important considerations regarding inquiry:

- The inquiry learning cannot be rushed.
- Then how to cover the syllabus.
- Need to see the bigger picture. What is essential and need to be taught?
- Remember, less is actually more. More information does not guarantee high performance of pupils on exams. It is their conceptual understanding and skills which are important.
- Students must find the pattern. For example, students need to learn that inferences cannot be drawn in absence of evidence.

Unguided inductive inquiry:

Here you will study what unguided inductive inquiry is? And how is it different from guided inquiry.

- During guided inductive inquiry, the teacher plays the key role in asking questions, prompting responses and structuring the material and situations.
- Once the class has mastered the techniques of guided inductive inquiry, teacher can introduce or allow for student-initiated situations for examining data, objects and events. Because the teacher's role is minimized, the students' activity increases.

What is Guided Inquiry?

Guided Inquiry is carefully planned, closely supervised targeted intervention of an instructional team of school librarians and teachers to guide students through curriculum-based inquiry units that build deep knowledge and deep understanding of a curriculum topic, and gradually lead towards independent learning.

Guided Inquiry is grounded in a constructivist approach to learning, based on the Information Search Process developed by Kuhlthau, for developing students' competence with learning from a variety of sources while enhancing their understanding of the content areas of the curriculum.

Key ideas of unguided inquiry:

1. Learners progress from making specific observations to making inference or generalizations.
2. The objective is to learn (or reinforce) the processes of examining events, objects, and data and then to arrive at appropriate sets of generalizations.
3. The difference from guided inductive inquiry is that, the teacher may control only the materials provided or encourage student-initiated materials. Teacher may pose questions, such as "what can you generalize from ...?" or "Tell me everything that you can do about X after examining these…"
4. The students without further teacher guidance ask all the questions that come to mind.

Unguided inquiry and the teacher:

- A teacher is a classroom clarifier, guiding students to develop logical thinking skills.
- Students will make generalizations that are too broad, infer single cause –and-effect relationships where there are several, and perceive cause-and-effect relationships where none exist.
- If errors exist in the student's logics or inferences, teacher needs to point them out. But teacher should not tell the student what the correct inference is. As there is much less direct teacher probing in unguided learning inquiry.
- Under unguided inductive inquiry, during initial stage teacher should ask students to work alone. When students work alone, they tend to do most of the work themselves. If at initial stage, Teacher divides the students in pair or groups, one in the group usually takes the leadership role and dominates the group's thinking, so that there are really only one participant and two observers.
- When students demonstrate the necessary aptitude to use the inductive method successfully in an unguided fashion, teacher can assign small groups to work together.

Unguided learning is important as well but teacher's role is very passive in the sense that teacher is not the active participant in the inquiry process. But to make students actively participate in the process, teacher needs to be there in the form of a prompter. If students do not tell the correct inference, then teacher must not tell them the correct inference. They are there to just guide the students.

Lesson No.33

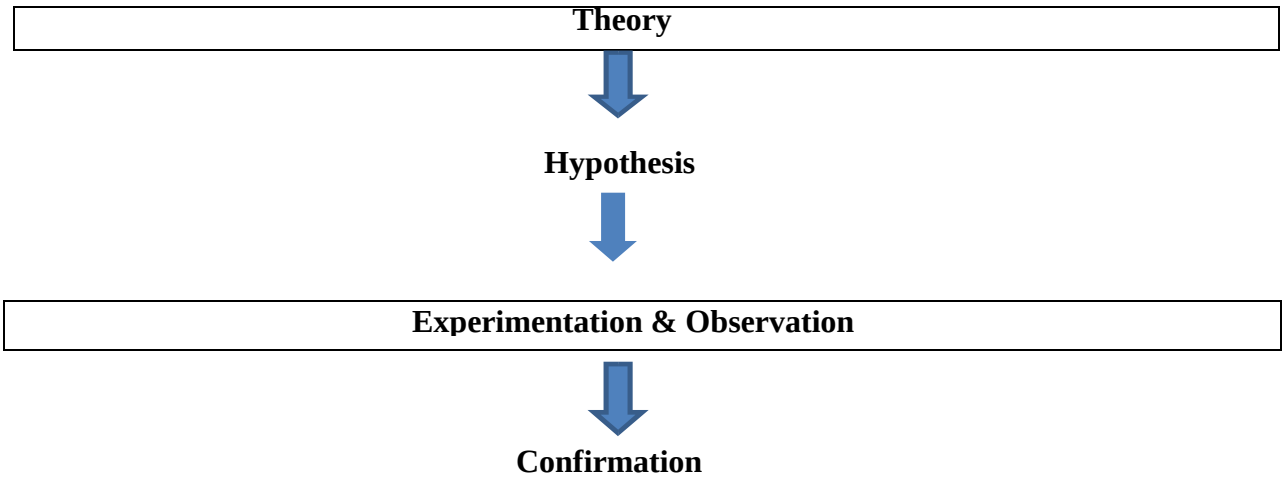
SCIENTIFIC METHOD

Objectives:

- Deductive method
- Scientific method
- Brief history of scientific method
- Variables

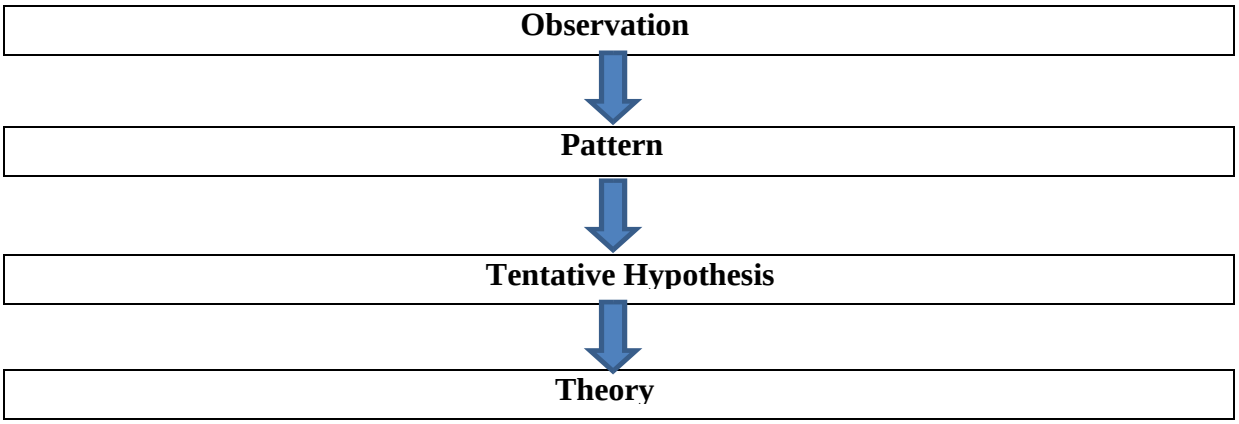
In inductive method we move from specific to general. Deductive method is just opposite. When we talk about prove we deduce.

Deduction



The statement is generalization. Generalization consists of two or more concepts. Confirmation stage is the complication of deduction process.

Induction



In mathematics mostly deduction is being used.

The scientific method

Science is an attitude basically. Its method cannot be defined on skill level. It is a step by step process which guides towards inquiry. Very often we say that we must research. Its main purpose. The **scientific method is a tool that helps scientists and the rest of us to solve problems and determine answers to questions in a logical format.**

History of scientific method.

This method is not invented by someone. Work on scientific method was started by Aristotle to Galileo. It is said that Galileo is the father of scientific method. Aristotle talked about logics and he was one of the pioneers. He promoted deduction. Scientific methods were basically developed. Greeks, Muslim scientists and many others were also involved in this development. But Galileo was the man who had contributed much for the development of scientific method. In our modern culture, Galileo (1564-1642) is generally credited with being the father of the scientific method. The Encyclopaedia Britannica (1970) says: "Even while Bacon was philosophizing, the true method was being practiced by Galileo, who, with a combination of observation, hypothesis, mathematical deduction and confirmatory experiment founded the science of dynamics.

Name

Originally the scientific method was called the experimental method and the method of science. When the word scientific was devised in the 19th century, the most widespread term applied to the method became the scientific method or science method.

When we started using it with technology its importance increased.

The most important thing of scientific method is that any theory can be falsified. Nothing is a static truth. If we do not falsify development cannot be possible. Advancement of technology is also based on this point. Scientific method is an attitude also. It means that when we accept challenges and gather arguments about it, it shows that we are very much open minded. Scientific method cab be used in social sciences also. Psychology is also a science because it uses scientific methods to its researches. Roots of the research of all social sciences are based on scientific method. Because of the scientific method these researches are authentic. Its small example is that when we say that something is traditional and it is truth. It means that we are not ready to falsify that thing. It also means that our attitude is not scientific. Main thing is that we should be open. Usually we do not question our tradition and authority. Scientific method cannot be used without scientific attitude.

Example

Identify a problem

You are faced with the problem of not being able to read because of your emergency light does not work, and you are not happy about it.

Research the problem

You think back to the last time your light does not work, and you remember that it was because of worn-out batteries.

Formulate a hypothesis

You guess that worn-out batteries is the reason your emergency light is not working.

Conduct an experiment

Now, so you get some new batteries from the drawer next to your bed and replace the ones in your light.

Reach a conclusion

Oh! Your emergency light works.

The interesting thing is that this method is very often used by the young children. For example, while playing with their toys they come across with many problems, they hypothesize the problem experiment and try to solve the problem. Scientific method is applied in every day situation. Teachers need to teach the students importance of this method and how they can use it in their lives.

Information theory is that human mind can take 5 to 9 chunks of isolated information at one time but when we take it in picture form it takes much less space.

How does scientific method look like?

- It starts with asking the questions.
- Doing background research
- Constructing hypothesis
- Testing the hypothesis
- Analysing results
- Drawing conclusions

- If hypothesis turns true then results are reported
- If hypothesis turns false then a new hypothesis is constructed and same steps are tried out.
- Communicating results

Edison had done minimum 1800 efforts to make a bulb. Somebody asked him why don't you give up? He said that every time I learnt that this method is not right to make a bulb. He rejected so many hypotheses and at the end he reported the method, many people experimented on that. So, the main thing in scientific method is openness, we should be able to accept the rejection of our hypothesis. It is a step by step process.

The scientific method

It starts with asking the questions. Questioning starts with observation. We hear things but we do not listen them. We see the things but we do not observe them.

Observation

Curious observation is the start of the inductive process. Discovery of new problems, ideas, theories, and decisions needed and problem prevention usually begins with curious observation using the five senses: smelling, tasting, hearing, feeling, seeing. Instruments and tools can be used to extend these senses. Use your sense perceptions and projections visually and mentally. We should believe that nothing is fact. Curious attitude is about question. We observe the thing but do not quest them so it is not curious observation.

Identifying the problem

See if there is any problem.

Look at the problem as challenges and opportunities

An idea, problem, decision or tentative theory should be presented in the form of a question because:

It encourages you to keep an open mind, and thus seek the "truth" and not to prove a statement.

A question is a tool and a guide for productive thinking about problem solving and investigation of a new subject. Any challenge is an opportunity. Problem should be stated in the question form. We will try to get the experts opinion. Then we will make the hypothesis, experiment on the problem them communicate the result.

Example

A child sees his mother making a cake. He sees that after completion of cake it becomes bigger in size. Because of his curious observation he asks the question that why it has become bigger in size?

Mother answers that we have added baking powder in it, because of carbon dioxide it has increased in size. The next question is that what is the process of fermentation.

Problem/Question

Hassan wonders if the amount of sugar used in the recipe will affect the size of cake?

Observation/ Research

Hassan researches the areas of baking and fermentation and tries to come up with a way to test his question.
He keeps all of his information on this topic in a journal.

Hassan talks with his teacher and she gives him an Experimental Design Diagram to help him set up his investigation.

Experimental sheet

Title

The effect of sugar on the size of cake.

Hypothesis

If sugar is increased then size of the cake will increase.

Observations: (Variables and Constants)

Hypothesis

The hypothesis is an educated guess about the relationship between the independent and dependent variables.
Reading is involved behind the educated guess. Experts opinions are also involved in it.

Variables

Variables are much important in scientific method. We cannot apply scientific method without variables. Variables are those things that can be changed. Constant things do not change. In the above example size of cake or quantity of sugar would be variables and oven would be a constant. Temperature would be constant.

Collect and Analyse results

Hassan examines his data and notices that his control worked the best in this experiment, but not significantly better than 100g. of sugar.

Conclusion

Hassan rejects his hypothesis, but decides to re-test using sugar amounts between 50g. and 100g.

Lesson No.34

PROBLEM BASED LEARNING

Objectives

- Problem based learning
- Difference between project and problem-based learning
- Learners outcome for PBL
- Special features of PBL
- Theoretical support
- Planning PBL
- Managing PBL
- Assessing PBL
- Obstacle of PBL
- Approaches of PBL

Being teachers, we must identify the problems of the children and help them to solve the problems. Teachers also have the problems. At times we are unable to solve the problems, the reason is that we do not learn to identify and solve the problems in our schools and homes. Problem solving is very useful learner cantered teaching and learning strategy. Good teachers are those who help children to learn. Children learn a lot from this method.

Problem-based learning (PBL) overview

The essence of problem-based learning consists of presenting students with authentic and meaningful problem situations that can serve as springboards for investigation and inquiry. PBL is designed primarily to help students develop their thinking, problem solving and intellectual skills and they actually learn through autonomous learners' opportunity.

What is Problem-Based Learning?

The "flow" of problem-based learning:

1. Problem based learning starts from problem engagement.
2. Inquiry and investigation
3. Problem resolution

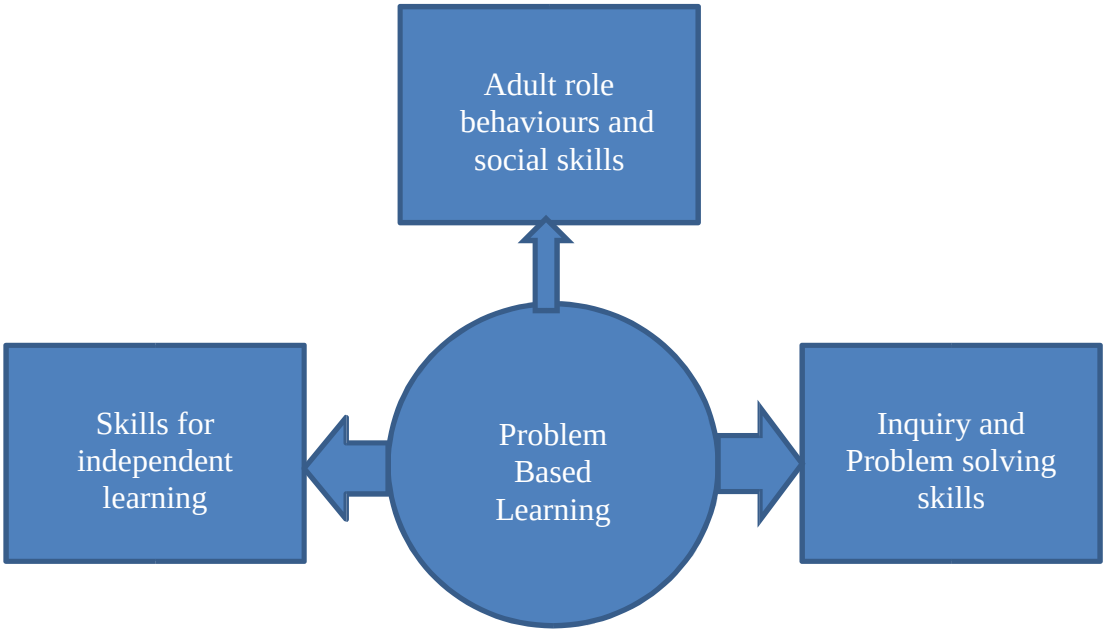
4. Problem debriefing

Basically, teachers give certain problem to the students. Students engage themselves in the problems. They carry out inquiry and investigation. They define the problem. When we talk about the problem, there is some relevant and irrelevant information. If we focus on irrelevant problem, we will not be able to identify the exact problem and solve the problem. To define the problem is very important. In problem-based learning students try to clarify the problem.

Difference between Project Learning and Problem Based Learning

In problem base learning the focus is on process. In project learning the focus is on ultimate outcome and product. Inquiry base learning and project learning are the learning approaches.
When we talk about learning approaches it has a lot of importance of process rather than product. If we talk about factories, at one time we assess them on the basis of product. Later on, it is assessed on the basis of process. Now both process and product are important.

Learner Outcomes for Problem-Based Learning



Usually problem base learning is done on groups. In groups naturally they will be able to communicate with each other and learn from each other. Cooperative learning is very important. For example, a child spends six hours in thinking and comes up with two brilliant ideas. While if we make the groups of children and they brainstorm for one hour and come up with six brilliant ideas. Group learning will be more efficient for developing the ideas. Group learning lso develops the social skills of the learners.

Special features of problem-based learning

- Driving question or problem
- Focusing on interdisciplinary integration.
- Authentic investigation
- Production of artifacts and exhibits.
- Collaboration

For curious observation, curious attributes are required. Problem based learning also starts from questions. Questions are based on reason and then investigate them.

Integrate learning with particular topic.

After identifying the problem, we integrate it with different factors. Problem based learning is not based on one discipline its focus must be interdisciplinary. We need to integrate with different areas. There is authentic investigation because we apply scientific method in it. In scientific method we ask the question, make hypothesis in the light of red literature. Then we test the hypothesis, if it is accepted, we draw our results if it is rejected, we make another hypothesis.
Children work is very important. They produce their original work after problem-based learning.

Cooperation is another important thing in this approach.

Theoretical support

- Problem Based Learning has its intellectual roots in the Socratic Method dating back to the early Greeks but has been expanded by ideas stemming from twentieth-century cognitive psychology. Socratic Method is based on dialogue generation. We can solve many problems through dialogue. Roots of problem-based learning are in dialogue. Its roots are also linked with cognitive psychology. In cognitive psychology higher order skills are involved.
- The knowledge base on problem- based learning is rich and complex. Several studies done in the last few years provide strong evidence about some of the model's instructional effects. However, other studies lead to the conclusion that effects are cloudy.
- Over the past three decades, considerable attention has been devoted to teaching approaches known by various names-discovery learning, inquiry training, higher-level thinking- all of which focus on helping students become independent, autonomous learners capable of figuring things out for themselves.

Its ultimate outcome is that students become autonomous learners.

Theoretical and empirical Support

Problem based learning will be traced through three main stream of twentieth-century thought.

1. Dewey and problem-oriented classroom
2. Piaget, Vygotsky and constructivism
3. Burner and Discovery learning

John Dewey said that classroom is just like a laboratory. Laboratory for the students to have experiences and applicant them in their real life. In real life there are many problems, these problems must also be presented in laboratory so that the children will be able to solve them. Piaget spend actually 50 years to work on constructivism. His approach was also that we must give opportunities to the students to identify and solve the problems. Its examples are puzzles.
Our focus needs to be interdisciplinary.

Vygotsky was a Russian Psychologist and his work was not translated very later. His work was based on the concept that our social environment also helps us to solve the problems. In this approach we ask the children to work in group and with cooperation. Another important thing of this approach is that teacher is not the central figure. Teacher only plan this. This is not the teaching method; it is a learning method.

Planning for PBL

- As its most fundamental level, problem-based learning is characterized by students working in pairs or small group to investigate puzzling, real-life problems.
- Because of Interactive nature, PBL requires as much, if not more, planning as compared to more teacher-cantered models.

It is difficult to manage problem-based learning. There might be problem in resource management. There might be problems to handle the students.

Managing for PBL

- Dealing with Multitask Situation
- Adjusting to differing Finishing Rates
- Monitoring and Managing Student work
- Managing Material and Equipment
- Regulating Movement and Behaviour outside the classroom

Assessing PBL

- Assessment tasks for problem-based lessons cannot consist solely of paper-and-pencil tests.
- Rather the work products created by students lend themselves nicely to performance assessment using scoring rubrics or checklist and rating scales.

- Performance assessment can be used to measure students' problem-solving potential as well as group work.
- We must assess the students in all three (cognitive, affective and psychomotor) domains.

How can problem-based learning be assessed?

By using multiple means to measure acquisition of knowledge, skills and dispositions.

To assess	Product	Method
Knowledge: Interrelationship among facts, concepts (Relational understanding)	Concept map, Unit product written/oral responses, traditional tests	Expert map-based scheme, Rubrics, SOLO taxonomy, scoring guides
Skills: critical creative thinking, collaboration, effective thinking, versatile communication	Unit products and/or performance, written/oral responses, observations, self-ratings, peer ratings	Rubrics, SOLO taxonomy, self-reports
Dispositions: intentional learning	Problem logs Observation	Content analysis, Rubrics

Knowledge can be assessed through written tests. But skills can be assessed through direct observation. Any presentation or display of some product are its simple examples. It needs to be assessed with diverse techniques.

Obstacle for PBL

The first and the most important thing is **training.** If we do not have proper training, we will not be able to apply this method.

Another obstacle is school **time table**. Sometimes it will be difficult to complete the task in short period of time. Teacher may have the break time or extra class to do the task, if he may do that.

Finishing the syllabus is another big hurdle. Content is not important but process is the main thing.

Lack of resources is another obstacle. For this reason, teacher needs to be innovative. He should not be the burden on the parents. Try to use the simple and available resources. Teacher can recycle the natural resources.

Approaches for Problem Based Learning

- Modelling

- Guiding
- Fade out

These are three things to apply the problem-based learning. In the first step teacher displays himself as a model. In second step he provides guidelines to them to do the tasks.
And in final step he fades out and provides the opportunity to the students to experience and solve the problems to their own.

Lesson No.35

COOPERATIVE LEARNING

Cooperative learning is a learning method. Cooperative learning is an umbrella term which covers many other methods. Cooperative learning methods are those in which more than one person work together.

Cooperative learning is a method of instruction that has students working together in groups, usually with the goal of completing a specific task. This method can help students develop leadership skills and the ability to work with others as a team.

Cooperative learning should have cooperative tasks, cooperative goals and cooperative rewards.

Objectives:

- Cooperative learning
- Overview
- Monitoring and Managing Student Work
- Planning Cooperative Learning Tasks

Let us consider some situations where you are present but could not work unless there are people around you.

- **Family**
- **Market:** You need people to buy something
- **Farming**
- **Sports:** There are some games which are individual games while others are group games. In team games, effort of all the players in included.

Cooperative learning:

- **Goal structure:** It is a way that goals specify the degree of interdependence sought among students. **There are three different types of goal structures: individualistic, competitive and cooperative.**
- **Individualistic goal structure:** It occurs when achievement of the goal by one student is unrelated to the achievement of the goal by other students. The achievement of one student should not be compared with the achievement of another student. Students are asked to perform individually.

- **Competitive goal structure:** It occurs when students perceive that they can obtain their goal if, and only if, the other students with whom they work fail to obtain their goals. E.g. grading on curve.
- **Cooperative goal structure:** It occurs when students perceive that they can obtain their goal if, and only if, the other students with whom they work also obtain their goals. E.g. group games.

Why cooperative learning is essential?

There are many reasons behind providing the students with cooperative learning. A lot of research is being done on it. We human beings are social animals and we are dependent on each other. A research was conducted in which 45 already conducted researches were analysed about cooperative learning. 37 out of 45 researches say that if students work in groups than their academic achievement is higher. Other remaining 8 researches concluded that if students work in groups or individually, their achievement remains the same. This was an experimental research in which one was control group and the other was experimental group. Control group was given individual tasks while experimental group was provided with cooperative learning tasks. And at the end, 37 researches show that the experimental group, who worked using cooperative learning styles performed much better than the controlled group.
The other remaining 8 researches concluded that if students work in groups or individually, their achievement remains the same.
There is no research which says that cooperative learning has a negative effect. If more than 80% of the researches say that cooperative learning helps in academic achievement of a student than essentially cooperative learning tasks must be provided to them.

Cooperative learning:

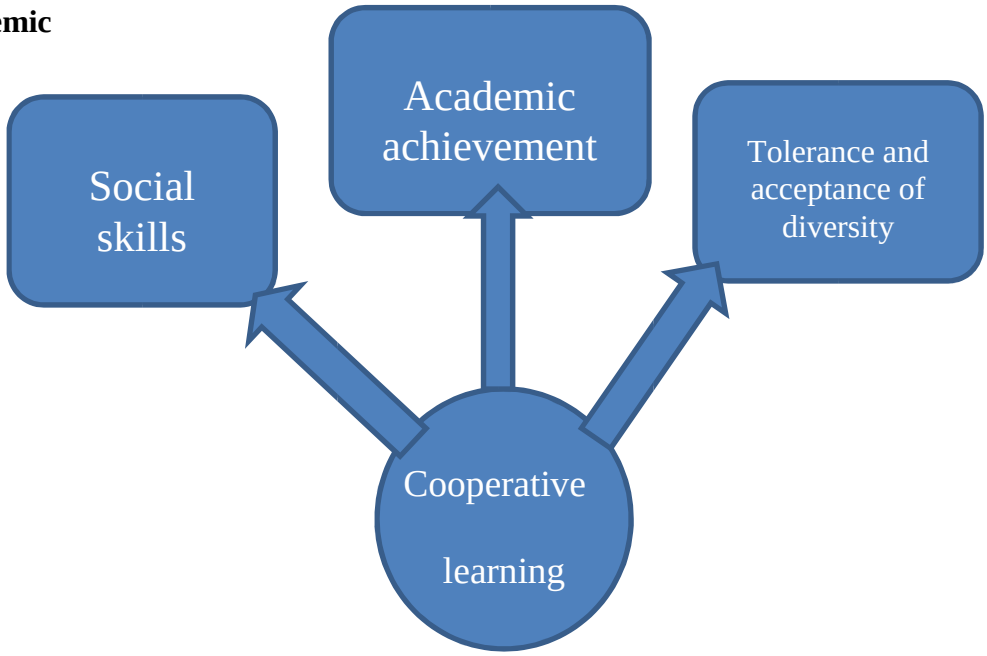
- It is a model which requires student cooperation and interdependence in its task, goal and reward structure.
- The cooperative learning model is characterized by cooperative task, goal and reward structures. Further students in cooperative learning situations are encouraged and/or required to work together on a common task, and they must coordinate their efforts to complete the task.
- Cooperative learning lessons can be characterized by the following features:

1. Students work in teams to master learning goal.
2. Teams are made up of high, average and low achieving students.
3. Whenever possible, teams include a racial, cultural and gender mix.
4. Reward systems are oriented to the group as well as the individual.

Many classrooms are observed where seating arrangement is in such a way where students can cooperate with each other. In fact, the students are not doing cooperative tasks. They are performing individually. They are sitting in groups but they are not cooperating with each other. Tasks must be cooperative in which each student should actively participate. Make sure that cooperative learning is challenging enough and could not be done individually.

Goals/Learning outcomes for cooperative learning:

Academic



The cooperative learning model was developed to achieve at least three important instructional goals: academic achievement, tolerance and acceptance of diversity, and social skill development**.**

Social skills: Communication is the most important skill.

Theoretical and Empirical support:

The cooperative learning model did not evolve from one individual's theory or from a single approach to learning. Its roots go back to the early Greeks, but its contemporary developments can be traced to the work of educational psychologists and pedagogical theories at the beginning of the twentieth century, as well as more recent information processing theories of learning and cognitive and developmental theorists such as Piaget and Vygotsky.

What are group skills?

Group skills are the skills with which students participate effectively in a group. E.g. readiness for action, sequencing a task, managing tasks, negotiation skills, communication skills, assessing skills or managing skills etc.

Group/Interdependence tasks:

A situation where a learning task can be accomplished by groups and cannot be accomplished by individuals who are working alone.

Group Investigation:

It is an approach to cooperative learning in which students help define topics for study and then work together to complete their investigations.

Planning and conducting cooperative learning lessons:

Syntax for cooperative learning model relies on small-group work rather than whole class teaching. (In large groups, there is no measure for gaging the participation of the students. But in cooperative learning, there must be small groups so that every individual can play an active role.)

How to plan cooperative learning tasks?

Firstly, you need to identify learning outcomes in the light of academic achievement, social skills as well as tolerance and acceptance of diversity. Once you have identified the outcomes, you need to identify the course content, which you are going to teach or you think that students need to learn or master. Then you need to think about the tasks. The tasks must be interdependent that could not be achieved by working alone. You need to identify the goal structure and plan reward system.

- Reward systems are oriented to the group as well as the individual.
- Cooperative learning environment is very important and it needs to be cooperative.
- There should be no abuse from the participants or in the classroom.
- Planning tasks associated with cooperative learning puts less emphasis on organizing academic content and more emphasis on organizing students for small group work and collecting a variety of learning materials to be used during group work.
- Cooperative learning requires deciding on the cooperative methods also. For example**:**
    1. Jigsaw
    2. Students Team Achievement Divisions (STAD)
    3. Academic controversy
    4. Think Pair share

Lesson No.36

COOPERATIVE LEARNING STRATEGIES

Objectives:

- Cooperative learning for diverse learners
- Cooperative learning strategies: Jigsaw reading, Think, Pair Share (TPS), number heads, STAD, Academic controversy.

Diversity could be of various types' e.g. linguistic diversity, cultural diversity etc. All the students sitting in the class could never be same. They may speak different languages; they may belong to different cultures, their height, weight, and colour may vary as well.

Another word is "disability". There could be some disabilities in your classroom. There could be some children who are hard to listening but sometimes teacher don't come to know and children also don't tell because of their shyness. As a result, their performance in class starts to suffer.

If a student has a weak eye sight, it can be removed with the use of spectacles. Similarly hearing disability can also be removed by using hearing aid. Some students have the disability to stammer a lot, but if teacher helps them in motivating to speak slowly and help them in speech therapy it can be overcome. Actually, different students in our class have different needs. Disability could be minor or swear but if any disability is in our class, we must try to accommodate it. These diversities or disability can be addressed through cooperative learning.

Cooperative learning for diverse learners:

- The teachers who use cooperative learning must find ways to adapt lessons to meet the needs of a diverse group of students.
- The most important opportunity inherent in cooperative learning is the chance for students with special needs and from diverse backgrounds to work together in cooperative groups and on special projects.
- Teacher must adapt cooperative learning lesson to meet diversity in their classroom. Before you divide the students into groups for group work, children need to learn about each other. They must know the strengths and weaknesses of each other. Once they know about strengths and weaknesses of each other, then they will be able to cooperate more effectively. They would be able to communicate more effectively. And ultimately, they will be able to produce something very effectively.

Another thing regarding diverse groups is that teacher's role is not minimized. Many a times, it has been observed that when students are placed in different group works, they are not monitored carefully or give feedback. Especially when there are diverse groups, teacher needs to give them feedback regularly and constantly. So that students can improve themselves.

Teacher needs to help regular students understand how their peers with disabilities differ and what they expect as they work together in learning groups. Help all the students understand cultural norms of various ethnic and racial groups and how these might affect group interaction and cooperation.

Cooperative learning strategies:

Cooperative learning strategies are:

1. Think-pair-share
2. Number heads together
3. Jigsaw reading
4. STAD
5. Academic controversy

1. Jigsaw reading: Explanation:

In jigsaw puzzle, a picture is divided into many small pieces and students are asked to join these pieces and make the picture again. Same is the case with jigsaw reading; a teacher has the topic to teach in the class and he asks to a student to read the text aloud. The text is read aloud by different students, one paragraph by one student, second by another, third by other and so on. When a child is reading the passage, half of the class is not listening, most of the times half class is feeling sleepy or not listening. In this case, teacher randomly asks the students to tell where the student is reading, on which line or paragraph. If a child tells correct, sometimes teacher get embarrassed and when child is unable to tell, he feels embarrassed. So, we need to make these tasks in class interesting. We may use jigsaw reading for this purpose.

In jigsaw reading, you have the text for teaching. Make that text photocopied and then divide it into 4 or 3 different parts and label them with "A, B, C or D" etc. Give the text to each group of students to read it carefully. Once they have read the text, you will ask them to close their texts and discuss these texts with each other for 1 minute. Arrange the students into groups. They will share their reading with each other. Then the teacher will give certain questions to them in problem form. You may also ask them to present their answers as well. The groups formed after the reading are said to be jigsaw groups. The first group formed is simple groups.

These groups are called jigsaw groups because different parts of the texts read by individual students are put together in one group.

Jigsaw reading include:

- First students will read the text
- Then share with each other
- Speaking and listening
- Then writing
- Writing also have problem solving

2. **Think-pair-share:**

Students are not allowed to come up with individual responses. When two students share their views with each other and then they share it with the whole class. This activity is called think-pair-share because the student first thinks individually, then he pairs it with the other group fellow and at the end it is shared with the whole class. Students look excited in such activity. Think-pair- share can be effectively used in the revision week at schools. These activities make revision much easier and effective.

3. **Number head together:**

Number heads together is an approach developed by Spencer Kagan (1998) to involve more students in the review of material covered in a lesson and to check their understanding of a lesson's content.

This activity has a direct focus on lesson content. Jigsaw and TPS also involves content but there is more process. It is very content-oriented cooperative strategy.

Teacher use the following four-step structure in this strategy:

1. **Numbering:** Teacher divides the students into three-to-five member teams and have them number off so each student on the team has a different number between 1 and 5.
2. **Questioning:** teacher asks student a question. Those questions can be very specific and in question form like "how many provinces are there in Pakistan?".
3. **Heads together:** Students put their heads together to figure out and make sure everyone knows the answer.
4. **Rewards:** teacher will reward the students and the winning team at the end.

Student Teams Achievement Division (STAD):

In this strategy, there is no issue of discipline.

- STAD was developed by Robert Slavin and his colleague at the John Hopkins University and is perhaps the simplest and most straight forwards of the cooperative learning approach.
- In this strategy, students are divided into four- or five-member learning teams without any gender or race discrimination.
- Team members use worksheets or other study devices to master the academic material and then help each other learn the material through tutoring, quizzing one another, or carrying on team discussions.
- Individually students take weekly or biweekly quizzes on the academic materials. These quizzes are scored and each individual is given an "improvement score".
- This student's score is based on the degree to which the score exceeds a students' past average.

5. **Academic controversy:** This activity involves teams of students and these students are given the topic for and against anything. They discuss with each other that how the topic is controversy.

Lesson No. 37

ORGANIZING COOPERATIVE LEARNING

Objectives

- Syntax of Cooperative learning
- Managing cooperative learning
- Assessing cooperative learning
- Advantages and limitations of activity and cooperative method

Syntax of cooperative learning

Syntax means structure. Syntax of cooperative learning includes six phases.

Phase 1: Clarify the goals

In this phase teacher tells the students what they are going to achieve.

Phase 2. Present information

There are different types of cooperative methods. In many techniques teachers present the information. For example in jigsaw technique teacher is one who select the text. For better management teacher may present the information.

Phase 3. Organize students into learning teams.

Phase 4. Assist teamwork.

When the children are doing some activity teacher must facilitate the students. His work is not to control to the students and only informing to the students.

Phase 5. Test on the materials/content

Phase 6. Provide recognition

Concerns in cooperative learning

- What should be the seating arrangement?
- How to make the use of effective resources?
- How to keep noise level normal?
- How to ensure fair share of all group members?
- How to assess individual input and achievement?
- How to resolve conflicts?
- How to ensure group self-assessment?

Managing cooperative learning

- Cooperative learning environment requires attention to a unique set of rather difficult management tasks. E.g. describing students how to accomplish a complex group project is much more difficult than assigning those problems at the end of a textbook chapter.
- Management tasks unique to cooperative learning help students make the transition from whole-class to cooperative learning groups, assist students as they work in groups and teach students social skills and cooperative behaviour.

Group Roles

Kagan (1994) roles have been adapted by Arends.

- **Task oriented role**
- **Process oriented role**

Task oriented roles are those roles which are needed to complete a task.

Process oriented roles are those roles which smoothens a process.

Under the **Task oriented role** there are 4 sub roles:

1 Taskmaster: he keep group members on task
2 Material monitor: picks up and returns materials
3 Coach: helps members with lesson content
4 Recorder: records ideas and plans

Under the **process oriented role** there are 4 sub points:

1 Gatekeeper: equalizes participation
2 Encourager: encourages members
3 Checker : helps members to check for understanding
4 Timekeeper: reminds members of progress and lack of

The difference between the role of a coach and checker is that a coach tells the group what is the content and how to understand it and checker asks the group whether they have understood this or not and if not he tells the coach of the existing situation.

Common situations

Miss Amna is concerned about her eighth-graders' performance in jigsaw. Some home groups consistently do very well, while others fail to learn essential information. She believes that some students, especially the lower achievers, have difficulty presenting their material well. How might she address this concern?

In jigsaw reading student select the text. Those students who select the same text are called home group.

1. Should she provide each expert group with study guides to help them identify key information?
2. Should she develop some additional roles in the home groups so students who have trouble presenting material effectively can play other roles?
3. Should she form a teacher-led expert group and assign slower students who have trouble presenting material to that group?
4. Have each home group present to the whole class so all students have the same opportunities to learn the material?

Jigsaw technique has two parts in first part children read the same text they are called home groups. In second part children of different home groups share their information. Problem in jigsaw technique is that when children do not understand the text in home groups they will not be able to present it in jigsaw groups. Understanding in home group is very much important.
Assigning different roles is a good thing in jigsaw technique a coach and a checker can be helpful in understanding the text. We should go for the second option. In management the most important thing is assigning the tasks.

Quiz

Miss Ayesha introduces a rule in her group discussions that the students really enjoy. Each student is given three tokens that are worth 15 seconds of talk time. When the tokens are gone, the student is no longer be able to participate in the discussion. She most likely instituted this rule to control --------.

a. Noise level.

b. The amount of time that dominant students take up in such activities.

c. The lack of participation of quite or shy students.

d. Both b and c.

Its correct answer is b. it is an interesting way to manage group activity.

Assessment of Cooperative Learning Strategy

- The cooperative learning model changes the reward system and consequently, requires a different approach to evaluation and recognition of achievement.
- A special challenge for cooperative learning teaching is how to grade for both team and individual efforts.
- For STAD and some version of jigsaw the teacher requires student to take quizzes on the learning material.

- Test item on these quizzes must be of an objective type, so they can be scored in class or soon after.
- The primary goal of cooperative learning is social skill development. These skills are not as easy to assess as academic skills are.

Students collaborative skills can be assessed through a Rubric designed so. Rubrics are of two types it can be rating scale and it can be of checklist. Rubrics are actually instruments to assess.

- In cooperative learning teachers have to be careful about their reward structure. It is important for teachers to reward the group product both the end result and the cooperative behaviour that produced it.
- Students should be assessed both in a group form and on individual basis. For this purpose teacher may do two evaluations for students. One for the group's effort and one for each person's individual contribution.

Quiz

Which of the following are the ways team achievements can be recognized?

1 Displaying group work in the halls.
2 Publishing teams' names in a class newsletter.
3 Giving certificates to team members.
4 All of the above.

These are all suitable ways to recognize the group efforts.

Lesson No. 38

PROJECT LEARNING

Objectives:

- Reinforcement of Assessing group task
- Essentials of group learning
- Project learning
- Project learning and thinking skills
- Essential components of learning projects
- Kinds of projects

Assessment: It is always a concern for teachers that how to assess group work. Most of the teachers claim that in group learning, they could not identify individual's learning. Individual performance is hidden in group tasks and as a result the students who do not work, never tries to work, and those who work always continue to participate in cooperative tasks. So the reward structure should be individualistic as well as group oriented. E.g. in a cricket match, when a team wins there is a recognition of team and also at individual performance basis, there is a title given as 'man of the match'. So group effort and recognition is there but you need to know what individual's contribution in that is.

Here is a situation for understanding:

Whenever Miss Amna uses jigsaw in her social studies classes she gives three grades: a quiz grade that assesses individual knowledge of the material, an individual grade for contribution to the group, and a group grade that reflects the group's accomplishments. Is her grading congruent with the cooperative learning system?

1. **No, the grading system penalizes students if their teammates do not perform well.**
2. **Yes, the grades reflect a balanced assessment of individual and group achievement.**
3. **Yes, the grades will reward motivated students who exhibit independence.**
4. **No, the grading system overemphasizes individual accountability.**

"No. 2 is the correct option"

So, being teachers we are concerned about assessment of group work that's why we are reluctant to use group activities in our class. But after learning about how to assess group activities in different ways teachers must try to include them in their routine lessons, so

that we can ensure students' knowledge development, skill development as well as attitude development.

Project Based Learning:

Project Based Learning is an instructional approach built upon authentic learning activities that engage student interest and motivation. These activities are designed to answer a question or solve a problem and generally reflect the types of learning and work people do in the everyday world outside the classroom.

Project Based Learning is synonymous with learning in depth. A well-designed project provokes students to encounter (and struggle with) the central concepts and principles of a discipline.

Project Based Learning teaches students 21st century skills as well as content. These skills include communication and presentation skills, organization and time management skills, research and inquiry skills, self-assessment and reflection skills, and group participation and leadership skills.

Project Based Learning is generally done by groups of students working together toward a common goal. Performance is assessed on an individual basis, and takes into account the quality of the product produced, the depth of content understanding demonstrated, and the contributions made to the ongoing process of project realization.

Finally, Project Based Learning allows students to reflect upon their own ideas and opinions, exercise voice and choice, and make decisions that affect project outcomes and the learning process in general.

Essentials of cooperative learning:

Four essential features of group work MUST be planned. If we do not plan these four features than our group work would be disaster. We will not be able to hold a meaningful activity in class. They are:

1. **How to form heterogeneous groups?** Do remember, heterogeneous groups are spirit of cooperative learning. Make groups randomly so that all high achievers may not get into one group. Or all low achievers in one group.
2. **How students are to work in their groups?** It means that a teachers needs to note down all the steps and these steps to do a particular task must be shared with the students. Teachers must provide clear and well-structured instructions to the students to perform a particular task.
3. **How rewards are to be distributed?** Teacher must tell the students about rewards that will be given to them at the end of the tasks.

4. **How much time is required?** Teacher must communicate budgeted time of the task to the students.

Limitations of Cooperative Learning:

- **The biggest limitation is the mind-set.** We assume that cooperating learning strategies or group learning activities are 'all play and no work'. Only memorizing the books is learning. We have to change this mind-set.
- **Fear of management and assessment:** many students, particularly those who excel in the more traditional, individualistic rewards structure, will likewise object to approaches in which interdependent activities are valued and rewards as shared.

Project Learning:

- According to research, if projects are structured properly, they allow the learner or groups of learners to be immersed in one big idea, or to work towards one common goal.
- The project challenges learners to use a variety of skills and intelligence and allows them to be involved in meaningful activity.
- Projects tend to be multidimensional and they encourage learners to extend their understanding of the content beyond the classroom and into real world.
- It is important for the teacher to consider students' developmental level when designing projects.

Project Learning and Thinking Skills:

- **Skills needed to accomplish the project will usually include problem solving, critical and creative thought and the ability to present information to others.**
- **According to Chapman and Freeman (1996), there are two factors that need to be considered:**
  1 **The students' ability to process information and**
  2 **The way in which the project will be used to extend the learning experience in any particular content area.**

(Project learning definitely enhances thinking skills of the students.)

Skills developed through projects:

They may be classified under three columns,

Critical thinking skills	Creative thinking skills	Social skills
1. Attributing	1. Brainstorming	Respecting others

2. Compare/contrast	2. Visualizing	Working independently
3. Classifying	3. Personifying	Managing time
4. Sequencing	4. Inventing	Cooperating
5. Prioritizing	5. Associating	Sharing
6. Draw conclusions	6. Inferring	Using resources effectively
7. Determining cause/Effect	7. Generalizing	Making choices/decisions
8. Analyzing for bias	8. Predicting	
9. Analyzing for assumptions	9. Hypothesizing	
10. Solving analogies	10. Making Analogies	
11. Evaluating	11. Dealing with ambiguity and paradox	
12. Decision making	12. Problem solving	

Essential Components of Learning Projects:

- **Teachers allow time for meeting with students to discuss project criteria.** (It is very important that there should be a project criteria. If students do not create project criteria then they will not be able to keep record of their pace and performance. Teacher may give time to the students to make their own group criteria after giving them directions.)

- **The "Mini-conferences" should take place, on person, as often as possible because these students will be working independently, e-mail communication should be encouraged, if available.**

- **Projects provide perfect opportunities for teachers to plan mini conferences. They should provide structure for sharing of students' work.**

- **Classmates and students from other classroom could be invited to view student's presentations, as well as to evaluate them.**

- **Carefully constructed questions (lower and higher order) could provide valuable learning opportunities for students attending the "projects/conference".**

Kinds of projects:

Projects may simply be classified under three categories. These are:

- **Exploratory Projects**
- **Research Projects**
- **Product focused Projects**

Usually it is said that projects are product focused i.e. at the end of the project, we ultimately get a product and that is a product which may be used by some people. But actually, the projects are not limited to product. They may be exploratory projects or research projects. Whichever the project may be, either it is research or exploratory, the information it provide will be highly valuable for other people.

Example of food – Project Learning:

- **You have learnt how to cook different foods, now explore foods of different regions of Pakistan and plan a food carnival.**
- **Projects:** Possible projects that can be given to students on food are as follows:
- **Adventure projects may last for weeks**
- **Making a classroom cookbook**
- **Making a cookbook for diabetics**
- **Making science/Geography Math Room**
- **Establishing a language lab**

All these projects are product focused because the ultimate product will be used by some other users/people.

Exploratory projects:

Exploratory projects are those where children explore something. E.g. Adventure projects, they may last for a week or more than a week. Girl Guide and scouts' projects are all adventure projects. Teachers may ask the students to visit places and to explore them. The report of adventure project will be very useful for others. So, whenever you send the students to such trips, ask them to make reports at the end of the project.

Research Projects:

Scientific method is often used in research. In research, you actually raise some questions and try to answer those questions whose answers are not there. Teachers can ask the students to conduct researches at very lower levels. The findings of those

researches or the outcome may be used by other people. Research for young children can be:

- To study a phenomenon.
- To make a record of all activities which are done in one week in school assembly?

Any inquiry task can be given to the students. Teachers can make them learn the application of scientific method. Teachers need to ask the students to apply scientific method to carry out certain research projects. And definitely when they will be working on a research project, their critical thinking skills, creative abilities and social skills will be developed.

Comments:

Teacher role in project-based learning:

Project-based learning is only possible in classrooms where teachers support students by giving sufficient guidance and feedback. The teacher must thoroughly explain all tasks that are to be completed, provide detailed directions for how to develop the project, and circulate within the classroom in order to answer questions and encourage student motivation. In order to create successful units focused on project-based learning, teachers must plan well and be flexible. In this approach to instruction, teachers often find themselves in the role of learner and peer with the students. Teachers can assess project-based learning with a combination of objective tests, checklists, and rubrics; however, these often only measure task completion. The inclusion of a reflective writing component provides for self-evaluation of student learning.

Student role in project-based learning:

Students generally work in small, collaborative groups in the project-based learning model. They find sources, conduct research, and hold each other responsible for learning and the completion of tasks. Essentially, students must be "self-managers" in this approach to instruction.[6]

Results of project-based learning research are mixed. Some studies suggest that it is an engaging instructional approach, but numerous studies have also claimed that students are not motivated by this type of learning, and that it places a great amount of stress on teachers.

Lesson No. 39

DISCUSSION METHOD

Objectives

- Overview of classroom Discussion
- Wait time
- Planning and conducting discussion lessons
- Types of Classroom discussion
- Managing classroom discussion
- Assessment & Evaluation of classroom discussions
- Syntax of classroom discussion

What is Discussion?

The word discussion very often used with the word discourse. If we will see its dictionary meanings, they both are considered as ways of exchanging ideas. But these both terms are quite different.

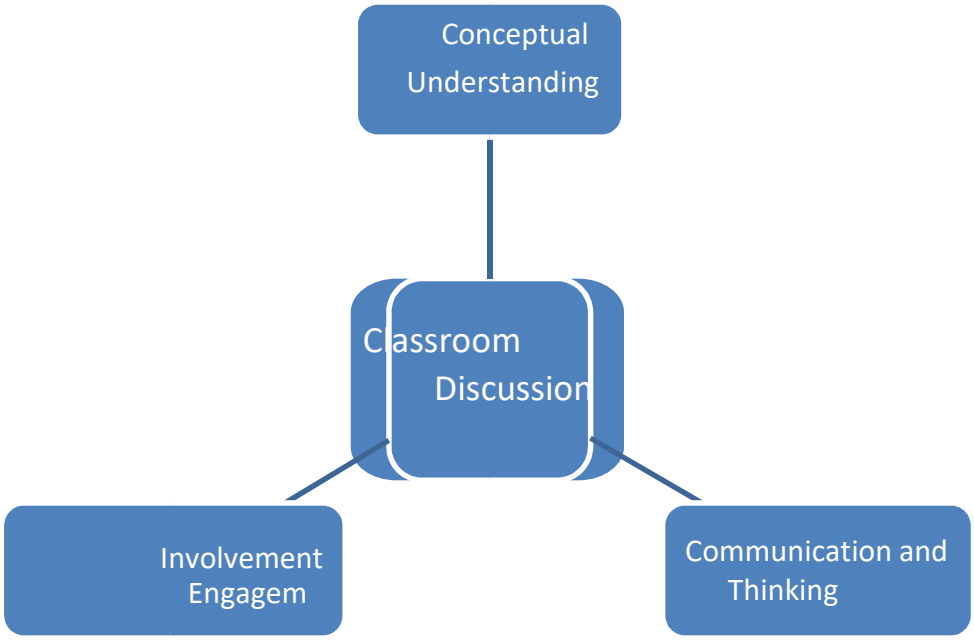
Discussion – Key Term

- Discourse The larger patterns of verbal exchange and communication that occur in the classrooms.
- Discussion A teaching method that relies on verbal exchange of ideas among students and the teachers.
- Researchers usually talk about discourse and teachers usually talk about discussion.
- Discourse is overall pattern and discussion is the exchange of ideas.

Overview of Classroom Discussion

- When experienced teachers refer to classroom discussions, they characterize them by students and teachers talking about academic materials and by students willingly displaying their thinking processes publicly.
- The primary instructional goals of a discussion lesson are to improve student thinking, to promote involvement and engagement in academic materials and to learn important communication and thinking skills.

Theoretical Foundations



Theoretical Foundations

Every theory is based on research.

- Most classroom discourse proceeds at too rapid a pace. Teachers can obtain better classroom discourse by slowing down the pace and giving themselves and their student's opportunities to think before they respond. Researcher used the word discourse for discussion method.

Learning environment for a useful discussion

- In general, discussion and classroom discourse patterns can be improved if teachers slow the pace and use methods to broaden participation and if they teach students to try to understand one another and have high interpersonal regard for each other's ideas and feelings.
- Teaching students four specific interpersonal communication skills (paraphrasing, behaviour description, feeling description and impression checking) can enhance the quality of classroom discourse and students' regard for each other.

In communication there is paraphrasing (the showing of understanding on some communication. In classroom discussion there is a lot of opportunity of paraphrasing. Behaviour description is another important skill in communication. Teachers need to exhibit the correct behaviour of the student. We must be able to exhibit our feeling in the

classroom. For example if some student is not agree on some point to a person. He can show his feelings in a good way. Describing one's feeling is very important.

How to plan and use Classroom Discussion

- An important planning task for a discussion lesson is deciding on which approach to use. There are several kinds of discussions. Major approaches include using discussion in conjunction with other teaching models; recitation discussions; discovery or inquiry discussions and discussions to clarify values and share personal experiences.
- Other important planning tasks for teachers to consider include determining the purposes of the discussion; and determining the type of questions to ask.
- Placing students in circles or using U-shaped seating arrangements facilitates classroom discussions. Socratic Method is basically a discussion method. It is also called dialogic method. We can develop knowledge through this method.
- Primary tasks for teachers as they conduct a discussion consists of focusing the discussion; keeping the discussion on track; keeping a record of the discussion; listening to students ideas and providing appropriate wait time. Wait time is thinking time. Question should be directive to the whole class. Than teacher should take a pause and indicate a student to answer the question. Teacher must give his feedback before moving on to the next student or question. The purpose of discussion is not only giving the information but to generate the thinking skills. The most important thing in thinking skills is to provide the wait time.
- Teacher should respond with dignity to the students' ideas. They should help the students extend their ideas by seeking clarification, getting students to consider alternative ideas and labelling students' thinking processes. Channelizing students responses are very important. Teacher role is like a facilitator.
- Teacher must be aware of gender discourse differences as well as those that stem from race and class. To be effective, they must adapt discussion to meet the diverse language patterns of their students. Teacher needs to know about the diversity in the class.

Types of Discussion

Excerpt 1

- Teacher: What are the sources of water pollution?
- Student A: People……
- Student B: The litter thrown in water.
- Student C: Oil from oil tankers.
- Teacher: Any other source of water pollution?
  (Silence in the class)
- Teacher: What about the pesticides sprayed on plants?

- Student D: Pesticides are necessary to kill the pests which cause harm to the plants.

Excerpt 2

Teacher: I think there are many sources of water pollution.

- Student A: People……..
- Student B: The litter thrown in water.
- Student C: Oil from oil tanker.
- Teacher: May be factory waste also.
- Student D: I think Pesticides also pollute water but they are necessary to kill the pests which cause harm to the plants.
- Teacher: Yes I agree but can there be some other way of doing something instead of using pesticides.
- Student E: I do not know exactly but we may use biological measures to reduce the use of insecticides.
- Teacher: I think all unnatural habits and things cause water pollution.
- Student A: It means people are the source of water pollution, in fact.

In both excerpt there is discussion.

IRE or Recitation Script

- Initiate – Respond – Evaluate (IRE) discourse pattern.
- The IRE pattern has been labelled a " monologic discourse pattern" (Alexander, 2006), in which teachers take turns at will decide on what topics are important to discuss, decide who will talk and for how long, and interject their responses and interpretations controlling the pace and direction of the discussion. This is known as teacher centered discussion.
- Teacher's talk time is more than 50% of students talk time.

Dialogic Discussion

- Dialogic discussion also called as interactive discussion. This has come from Socrates method. In second script there was dialogue. First script is monologic because there was a lot of teacher control.
- In this interaction, students produce a "chain of utterances" (Nystrand, 2006) where they are able to talk without interruption or re-direction from the teacher. Students listen and respond to one another as well as the teacher. In addition, the teacher responds to the students' ideas rather than the students simply answering a series of questions asked by the teacher. Dialogic discussion promote divergent thinking. Monologic discussion promotes convergent thinking.

Assessing classroom discussion

- Classroom discussion is assessed on four skills communication, thinking skills, active engagement and conceptual understanding. We cannot assess all these skills on paper pencil test we need different techniques to assess different skills.

Syntax of classroom discussion

- Phase 1: clarify aims and establish set
- Phase 2: focus the discussion (rules, issue, situation)
- Phase 3: hold the discussion
- Phase 4: end the discussion
- Phase 5: debrief the discussion (examining own thinking processes)

Lesson No. 40

DIRECT INSTRUCTION

Objectives

- Syntax of classroom discussions
- Direct instruction
- Theoretical and empirical support
- Planning and Conducting Direct Instruction Lessons
- Managing direct instruction
- Assessing direct instruction

Syntax for holding Classroom.

Discussion

Phase 1. Clarify aims and establish set

Phase 2. Focus the discussion (rules, issue, and situation)

Phase 3. Hold the discussion

Phase 4. End the discussion.

Phase 5. Debrief the discussion (examining own thinking processes)

In the first step teacher need to tell the students what they are going to achieve at the end of the lesson before the discussion. Second phase is about the rules of discussion. For example what language and expressions should be used? In third step we will see what type of discussion will be held. There are two types of discussions 1. Monologic 2. Dialogic. Monologic discussion is teacher centered discussion. In dialogic discussion teacher is also just like another participant. Next step is about the timeframe of discussion. At the end teacher actually sums up the discussion. In debriefing teacher tells the students to reflect what they have learnt through this process? It can develop thinking skills of the students. Reflective thinking will be developed through debriefing.

Example questions

- Which of the following is not a primary instructional outcome for discussion?
    A. Increased retention of basic knowledge.
    B. Improve communication skills.
    C. Greater student engagement.
    D. Higher-level thinking.

Correct answer is a. in discussion method the purpose is not that students will memorize the content. Its basic purpose is to develop the higher level thinking skills of the children.

- Which of the following is the best learning environment for a discussion?

  A. Highly structured with active student roles.

  B. Active teacher role

  C. Moderately structured with active student roles.

  D. It depends upon the topic being discussed.

The correct answer is d. the most important thing in discussion is that if the topic is convergent teacher should be active. And if the topic is divergent then the teacher must have less talk time. While planning discussion we should keep it in mind not to plan discussion on abstract topics.

Direct Instruction

It is very much teacher controlled method. It is not exactly lecture. Difference between lecture and direct instruction is that lecture only gives declarative knowledge. In direct instruction just gives declarative as well as procedural knowledge to the students. Direct instruction is a broader term. It also develops the skills of the students.

- The instructional effects of the direct instruction model are to promote mastery of simple and complex skills and declarative knowledge that can be carefully defined and taught in a step-by-step fashion.
- The direct instruction model draws its theoretical support from behavioural theory, social learning theory and teacher effectiveness research.

A lot of examples are there which involves procedural knowledge. For example in math there are facts and concepts but it has procedural knowledge also.
Teacher tells about a formula and a step- by-step procedure to use that formula. Art work is also its example. Task analysis model is used under the domain of direct instruction.

Planning direct instruction

- The five phases of a direct instruction model are:
  1 Providing objectives and establishing set.
  2 Demonstrating or explaining the materials to be learned.
  3 Providing guided practice.
  4 Checking for the student understanding and providing feedback.
  5 Providing for extended practice and transfer.

Key Terms

Guided practice

Practice assigned to the students to be completed under the guidance or watchful eye of the teacher.

Distributed Practice

Practice assigned to the students to be done for brief periods spread over several sessions or periods of time.

Massed practice

Practice assigned to students to be done during a single extended period of time.

Independent practice

Practice given to the students to accomplish on their own without the teachers' guidance.

Homework

Independent practice and academic work performed outside the classroom. Homework is very important in direct instruction.

Overlearning

Working or practicing a task or skill until it is learned completely and can be performed automatically.

Daily drill of anything is distributed practice. Automation is the example of overlearning. Automation is very important in direct instruction. If the child is not reached to the level of automation it means that we are not using direct instruction properly.

Conducting Direct Instruction

- Conducting a direct instruction lesson requires teachers to explain things clearly; to demonstrate and model practice behaviours; and to provide for practice, monitoring of performance and feedback.
- The use of practice should be guided by several principles; assigning short, meaningful amounts of practice; assigning practice to increase overlearning; and making appropriate use of massed and distributed practice.

Meaningful practice is very important in direct instruction. Just like practice feedback is also very important. Modeling is a way to present certain behaviour and learning. In modeling feedback is very important. Feedback should be appropriate and constructive. For example if we say very good to the student this will not be an appropriate feedback because child will not understand about the areas of improvement.

Environment for conducive Direct Instruction

Direct instruction lessons require the unique classroom management skill of gaining students' attention in a whole-group setting and sustaining this attention for extended periods of time. Particular classroom management concerns include organizing the classroom setting for maximum effect; maintaining appropriate pace, flow and momentum; sustaining engagement, involvement and participation; and dealing with

student behaviour quickly and firmly. Declarative knowledge can be assessed through paper and pencil.

Assessment of learning through direct instruction

- Assessment tasks associated with the model put emphasis on practice and on developing and using appropriate basic knowledge and performance tests that can accurately measure simple and complex skills and provide feedback.

Limitations

- Too teacher centered.
- Keeps students in passive roles.
- However, it remains a very popular teaching model because it allows a teacher to accomplish major goals of education as expressed by the larger society.
- Rosenshine (1987) came up with a conclusion that, "Teaching mathematical procedures, computation, reading, explicit reading procedures(distinguishing between fact and opinion, science concepts, rules, foreign language and grammar can be easily done through direct instruction".

Lesson No. 41

DISCOVERY LEARNING VS PRESENTATION

Discovery learning is a learner-centred method. Presentation is a teacher-centred method. For learning activities, we prefer students-centred learning methods.

Sometimes people tend to use word discovery learning for activity-based learning. All activities are not discoveries.

- **Discovery learning is a method which employs spirit of discovery.**

What is discovery learning?

Discovery learning is

"an approach to instruction through which students interact with their environment- by exploring and manipulating objects, wrestling with questions and controversies, or performing experiments"

(Ormrod, 1995, p. 442)

"Discovery learning encompasses an instructional model and strategies that focus on active, hands-on learning opportunities for students".

(Dewey, 1916/1997; Piaget, 1954, 1973).

Discovery learning is a teaching method in which a student interacts with the environment and tries to learn something. A child discovers knowledge for himself/herself.
For example, a teacher takes her students in a lawn or in a ground and asks them to observe the things very carefully. She can ask the students to identify how many kinds of flowers are there in the lawn. Or the flowers in the lawn are of how many colors? Students will try discovering the flowers. Similarly, children play a variety of games which comes under discovery learning i.e. jigsaw puzzles, it means that a child is trying to discover the parts of the puzzle and then try to fix them.

Attributes of Discovery Learning:

Tracy Bicknell-Homes and Paul Hoffman explain that discovery learning has three main Characteristics:

- **Exploration and problem solving;**
- **Student-centred activities based on students interest; and**
- **Scaffolding new information into students' funds of knowledge (scaffolding: Providing an outside support)**

Types of Discovery Learning: Category 1.

- **Experiments:** Definitely in experiments the students are discovering, not only at the end but in the process of experiment as well. E.g. sometimes students may discover that the material used in the experiment is not of a good quality. Students discover knowledge for themselves.

- **Exploration:** The action of traveling in or through an unfamiliar area in order to learn about it. Exploration can be in jigsaw puzzles or in treasure hunt games etc.

Exploration of any type is discovery learning.

- **Simulation-based learning:** A simulation-based learning environment is a setting for learning that includes a controlled, shielded and often simplified copy of a real world process or system to be studied. Simulations are done in the virtual environments and are computer based. A child engaged in simulation based learning is again discovery.

- **Problem-based learning**
- **Inquiry-based learning**
- **Web quests**

The above underlines types of learning are all students-centered.

Types of Discovery Learning: Category 2.

1. Case-based learning:

- **Groups of students are given a case to read and examine. The class then discusses possible solutions to the problem described.** Teachers must provide the students with opportunities to discover things. Case method or case-based learning activities are in fact very engaging.

2. Incidental learning:

- **Game-like activities**
- **Crossword puzzles**

3. Learning by exploring/Conversing:

- **Students asking questions**
- **What's in the bag? Game**

4. Learning by reflection:

- **Learning to ask better questions**
- **Teacher answers a students' questions with additional questions for the students to answer (Socratic method)**

5. Simulation-based learning:

- **Experimenting in an artificial environment**
- **Allows for trials without fear of failing**
- **Planning and taking a space mission**

Syntax of discovery learning: (Steps)

There are 9 steps of discovery learning, and discovery learning should be done according to these nine steps:

1 **Select an activity**. Choose an activity that does not have just one correct answer. Roleplaying, creating sculptures, observing characteristics of subjects, or searching for or classifying similar items all work well. (Select an activity that ensures discovery learning in it.)

2 **Gather material.** Plan enough materials for each learner to repeat the activity at least once.

3 **Stay focused.** Avoid learning tangents that may be interesting but will keep the learner away from finishing the project. (Whenever discovery learning is planned, there are many interesting tasks for the students. Sometimes students attention is diverted, it should not happen. Teacher needs to ensure that students are focused.)

4 **Use caution.** While the idea of discovery learning is for the instructor to step back and observe allowing the child to work independently, be sure that safety is observed.

1. **Plan extra time.** Understand that children working on their own will most likely take longer than they would with an adult moving them from step to step. Also be sure to plan time for repeated activities in case there is a failure or other reason to repeat the activity.

2. **Record process and results.** Include in the activity a requirement for older children to record their procedure and results. For young children guide, assist, or model record keeping.

3. **Feedback and review.** After an activity is completed and before it is repeated a second time (if needed), discuss the activity and its outcome with the child. Use the records which were kept to assist during this step.

4. **Try again.** Have the child repeat the activity if necessary. Give assistance and guidance as necessary.
5. **Plan for more discovery learning activities.** Think over how this activity worked for the child. As you plan more discovery activities take the answers to these questions into consideration. What went well? What could have gone better? How can any problem areas be corrected or alleviated?

Examples of Discovery Learning:

- Are all oak leaves of the same shape? Make children aware of the diversity within leaf structure. Introduce, or reinforce, simple recording skills, and practice basic counting skills too.
- Treasure hunt
- Underground plant exploration
- Look at pictures and describe Harappa Civilization.

"Presentation- A Teacher-centered Method"

- It is sometimes called as lecture method.
- It is an approach to teaching wherein the primary emphasis is on explaining new information and ideas to students where information is about knowledge of facts, concepts or principles.
- Presentations, explanations, and lectures by teachers comprise a large portion of classroom time primarily because curricula in schools have been structured around bodies of information that students are expected to learn.

Syntax for presentation:

- Need to present objectives and establish set.
- Presenting an advance organizer
- Using processes to monitor student understanding and to help extend and strengthen student thinking.
- Effective presentations are those presentations which follow rule-example-rule technique

Rule-example-rule technique:

- A technique used when explaining something whereby the general principle or rule is given first, then elaborated on with specific examples, and finally summarized by a restatement of the rule.

Quiz:

Which of the following lesson objectives will be more appropriate for a lesson using the presentation model?

1 Students will be able to dissect a frog.
2 Students will describe the anatomy of the frog.
3 Students will prepare a slide for microscopic view.
4 Students will examine frog cells under a microscope.

Because the primary purpose of presentation model is to give information. Information could be of facts, concepts or generalizations. So, presentation method is generally used for giving information to the students. But students will not gather information unless a teacher do not employ the technique of rule-example-rule.

Lesson No. 42

MOTIVATION FOR LEARNING

Objectives

- Motivation
- Motivational theories
    - Reinforcement theory
    - Need theory
    - Maslow's hierarchy of needs
    - Cognitive theories of motivation
    - Social learning theories
- Intrinsic vs Extrinsic motivation
- Productive learning community
- Features for classroom motivation

Motivation:

It is a driving force which helps someone to perform a task. So, motivation can be named as a force which keeps the person moving on.

- **The concept of human motivation is defined as the processes within individuals that arouse them to action. It is what gets individuals "moving" towards specified activities and tasks.**

It is a complex process which is made up of different processes. These are processes which helps the person to act.

Motivation theories:

Do remember, that no concept is authentic or it can be debated unless it is not backed up with support of theories. There are four distinct categories of motivation:

- **Many theories of motivation exist. For that are particularly relevant to education include reinforcement theory, needs theories, cognitive theories and social learning theories.**

1. Reinforcement theory:

Reinforcement theory emphasizes the importance of individuals responding to environmental events and extrinsic reinforcements.

Environmental factors are important to reinforce certain behaviour. E.g. if you want to reinforce a behaviour among your students that they must do their homework. You can

reinforce this behaviour among students by giving them rewards. **To enforce behaviour positively among students is a positive reinforcement.**

Negative reinforcement occurs when something already present is removed (taken away) as a result of a person's behaviour, creating a favourable outcome for that person. Basically, when a person's behaviour leads to the removal of something that was unpleasant to that person then negative reinforcement is occurring.

Reinforcement theory of motivation says that children's behaviour can be modified through

Positive or negative reinforce.

- **Positive reinforcement**: the adding of an appetitive stimulus to increase a certain behaviour or response.
  Example: Father gives candy to his daughter when she picks up her toys. If the frequency of picking up the toys increases or stays the same, the candy is a positive reinforcer.
- **Positive punishment**: the adding of an aversive stimulus to decrease a certain behaviour or response. Example: Mother yells at a child when running into the street. If the child stops running into the street the yelling is positive punishment.
- **Negative reinforcement:** the taking away of an aversive stimulus to increase certain behaviour or response.
  Example: Putting ointment on a bug bite to soothe an itch. If using ointment on bug bites increases, the removal of an itch is a negative reinforcer.
- **Negative punishment (omission training)**: the taking away of an appetitive stimulus to decrease a certain behaviour.
  Example: A teenager comes home an hour after curfew and the parents take away the teen's cell phone for two days. If the frequency of coming home after curfew decreases, the removal of the phone is negative punishment.

Quiz:

Fatima is a student who has been suspended for cheating in class. The act of suspension is best called ----------.

A. A positive reinforce

B. **A negative reinforce**

C. A punishment

D. Intrinsic motivation

What would you do as a future teacher to enhance intrinsic motivation in your students?

Motivating students to become intrinsically motivated is no easy task for teachers. To some students, they enjoy learning. But for the others, this is where is the challenge really comes in. To facilitate material to students "dry" would totally be out of my agenda. I would try to teach

to my students to the point where the material becomes alive within them. I to make their minds grow in curiosity of the subject so continual learning can take place. I would do this by means of relating material to what interests the students. I would also put as much energy into my teaching whether it be in my tone of voice, body language, appearance, or all of the above. One thing that I'd like to do also is at the end of my class period, I would try to always close my lessons leaving my students with a question to ponder on dealing with the subject material that was taught. That way in their spare time, their minds will continue to ponder on the lesson and question at hand.

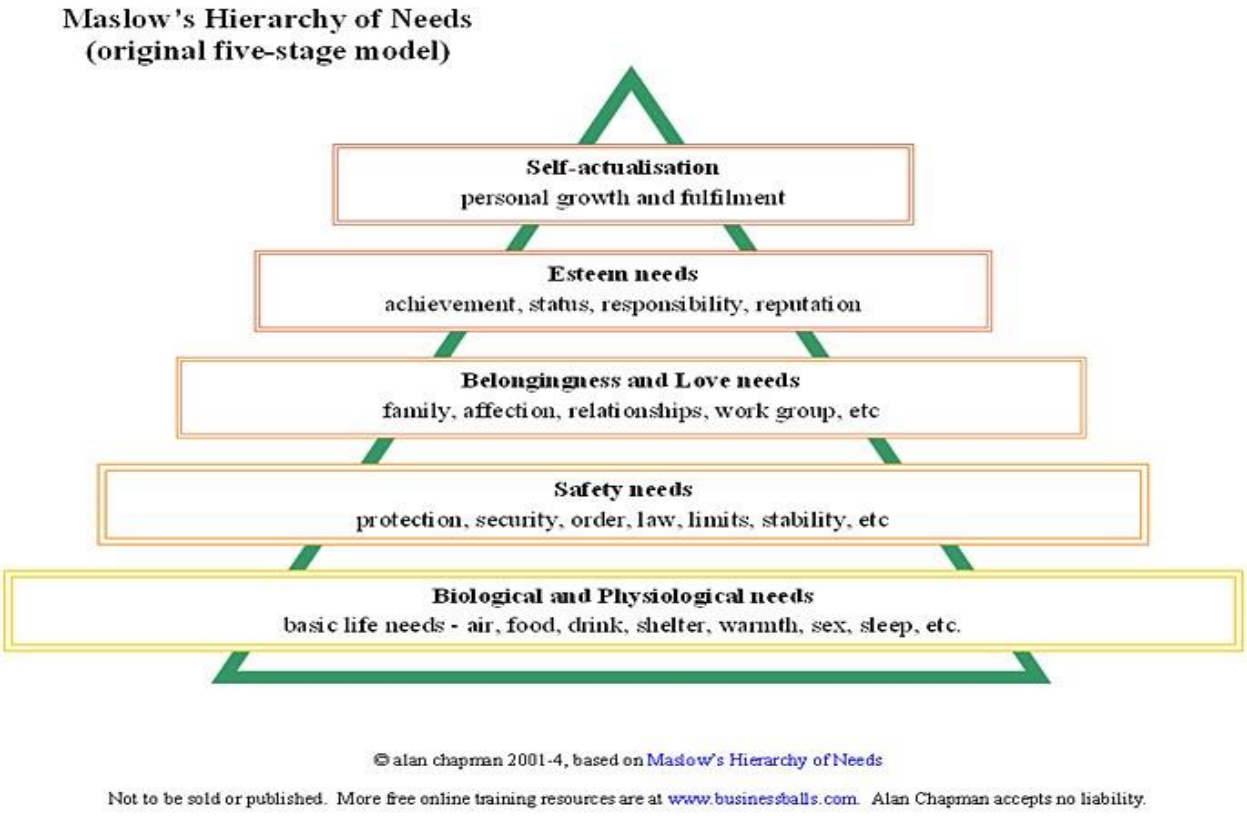
Need theory:

- **There are several different need theories. In general, these theories hold that individuals strive to satisfy internal needs such as self-fulfilment, achievement, affiliation, influence, and self-determination.**

Maslow's hierarchy of needs:

Maslow says that there are five basic needs, he made a pyramid of those needs and categorizes them as:

1 Biological and physiological needs.
2 Safety needs
3 Belongingness and love need
4 Esteem needs
5 Self-actualization needs



Physiological needs:

The definition of physiological needs is quite obvious; they are the physical requirements for human survival. If these requirements are not met, the human body cannot function properly, and will ultimately fail. Physiological needs are thought to be the most important; they should be met first. Therefore, a human lacking food, love, esteem, or safety would consider the greatest of his/her needs to be food.

Safety needs:

With their physical needs relatively satisfied, the individual's safety needs take precedence and dominate behaviour. In the absence of physical safety – due to war, natural disaster etc. – people may (re-)experience stress disorder. In the absence of economic safety – due to economic crisis and lack of work opportunities – these safety needs manifest themselves in ways such as a preference for job security,

Love and belonging:

After physiological and safety needs are fulfilled, the third level of human needs is interpersonal and involves feelings of belongingness. According to Maslow, humans need to feel a sense of belonging and acceptance among their social groups, regardless if these groups are large or small. Some examples of small social connections include family members, intimate partners, mentors, colleagues, and confidants. Humans need to love and be loved - both sexually and nonsexual - by others.

Esteem:

All humans have a need to feel respected; this includes the need to have self-esteem and self-respect. Esteem presents the typical human desire to be accepted and valued by others. People often engage in a profession or hobby to gain recognition. These activities give the person a sense of contribution or value. Low self-esteem or an inferiority complex may result from imbalances during this level in the hierarchy. People with low self-esteem often need respect from others; they may feel the need to seek fame or glory. However, fame or glory will not help the person to build their self-esteem until they accept who they are internally.

Self-actualization:

This level of need refers to what a person's full potential is and the realization of that potential. Maslow describes this level as the desire to accomplish everything that one can, to become the most that one can be. However, this is a broad definition of the need for self-actualization; when applied to individuals, the need is specific. For example, one individual may have the strong desire to become an ideal parent. In another, the desire may be expressed athletically.

Cognitive theories of motivation:

Cognition means to know or to proceed. Cognitive theories do not address much about motivation. But there are few who address motivation, these are:

- **Cognitive theories of motivation stress the importance of the way people think and the beliefs and attributes they have about life's situations.**
- **Learners actively construct their own understandings.** Because they are active learners and they actively construct their knowledge and understanding. So, teachers may help them to understand any expectation at cognitive level. Cognitive theories focuses on 'whatever we teachers do, that needs to bring change in consciousness'. So our focus will be on consciousness and not only about observing the behaviour. And this is the major difference between cognitive theories and reinforcement theories.

Social Learning theories:

- **Social learning theory hypothesizes that individual's actions are influenced by the value particular goals hold for them and their expectations for success.**
- **These theories help us to understand how modeling and reinforcement work in a social context.**

"Important sources for motivation for social learning theorists include learner expectations and personal goals".

(Bandura, 1986)

Here our social context is very important. It tells us which behaviour needs to be exhibited. There are two important factors i.e. personal goals and external expectations.

- **Bandura renamed social learning theory as social cognitive theory as it involves on a number of ideas drawn from cognitive science.**
- **Bandura worked on modeling process which was his great contribution. Let us revise that. Modeling involves: attention, retention, production and motivation.**

Quiz:

Faiza initiates a program that rewards students who hand in completing assignments on time for one full month by allowing them to have a pizza party. Homework completion rate increases substantially. The theory that best explains this student behaviour is ----------.

A). Need Theory

B). Social Learning Theory

C). Reinforcement Theory

D). Cognitive theory

Extrinsic vs intrinsic motivation:

- **Expectations based upon consequences have extrinsic rewards.**
- **Intrinsic motivation may be defined as**

"What motivates us to do something when we don't have to do anything".

(Raffini, 1996)

- Extrinsic and intrinsic motivations are two opposing ways to motivate people. Extrinsic motivation deals with motivations that are outside of your passions, and personal self-esteem. Extrinsic motivation examples would be money, bonuses, nice cars, expensive houses, high grades in school, gold stars for athletics, etc. Extrinsic motivation is anything outside of yourself that you need to obtain or acquire to increase motivation. Intrinsic motivation is the opposite. You get paid for doing what you truly enjoy doing, nice cars and houses don't motivate you as much as your joy in work, learning, and the things that truly motivate you internally.

What research says about extrinsic and intrinsic motivation?

Kohn (1993) findings:

- Young children do not need to be rewarded to learn. He says that children are intrinsically motivated
- At any stage, rewards are less effective than intrinsic motivation.
- Rewards for learning undermine intrinsic motivation.

Productive Learning Community:

Teachers must not motivate individual students rather there should be collective motivation, so that the whole class becomes the learning community. Productive learning community is something where children are producing some good processes and ultimately processing some good results.

- **A productive learning community is characterized by an overall climate in which students feel positive about themselves and their peers, individual needs are satisfied so students persist in academic tasks and work cooperatively with the teacher, and students have the requisite interpersonal and group skills to meet the demands of classroom life.**

Features of classrooms for students' motivation:

- **Three important features that help us understand classroom communities include classroom processes, and classroom structures.**
- **Classroom properties are distinctive features of classrooms that help shape behaviour. These include six important properties: multidimensionality, simultaneity, immediacy, unpredictability, publicness, and history.** These properties influence classroom life.
- **Classroom processes define interpersonal and group features of classrooms and include friendship, expectations, leadership, norms, communication, and Cohesiveness.**

- **Classroom structures are the foundations that shape particular lessons and behaviours during those lessons. Three important structures include task, goal, and participation structure.**

Motivation strategies:

Teachers use a variety of motivational strategies in their classes. It includes behaviour modification strategies, Teachers identify individual learning needs, teachers model them, sometimes case studies are given to them so that they can reflect on them and their cognition is improved.

Lesson No. 43

TEACHING MODELS FOR MOTIVATION

Objectives

- Motivation for learning
- Teacher as a decision maker
- Planning instruction
- Addressing diverse learning needs
- MAT model for learning
- Assessing students' learning

We will start with a small question on motivation

Quiz

Teachers are most likely to build productive learning communities by --------.

a) Using a variety of motivational and group development strategies

b) Relying on positive and negative reinforcement to motivate students

c) Avoiding overemphasis of intrinsic rewards

d) Focusing on individual needs

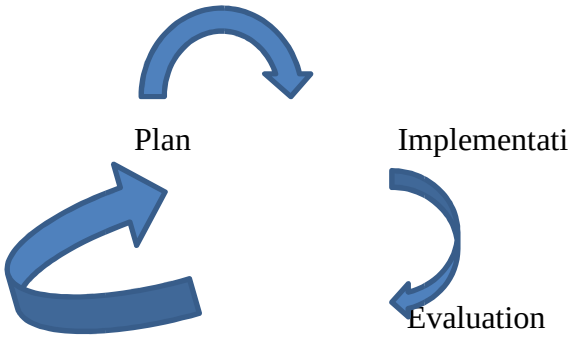
"A" option is the correct option.

Features of classrooms for students' motivation

- Some classroom features can be altered by teacher; others cannot. Multidimensionality and immediacy cannot be influence readily by the teacher. Classroom is a multidimensional place.
- Group processes and the classroom goal, task, reward and participation structures are more directly under the teachers' control. Teacher's expectations are extrinsic. Expectations are external while personal goals are internal.
- Studies have uncovered important relationships among teacher practices, student engagement, and academic achievement.
- In general, students react more positively and persist in academic tasks in classrooms characterized by democratic as opposed to authoritarian processes, in classrooms where learning activities are interesting and challenging. Teacher control is authoritative process. In democratic process children are involved. Children work together to solve the problems. In this process every child has his own role. In schools teacher may involve the students in the process. For example while making timetable teacher may involve the students by taking their suggestions.

- Influence in classrooms does not flow just from the teacher. Studies show that students influence each other and the behaviour of their teachers also. Peers can be great motivational support.
- Effective teachers create productive learning communities by focusing on things that can be altered, such as increasing student motivation and encouraging group development. There is a range of motivation strategies. To make productive learning communities is itself a motivational strategy. Peer tutoring is another motivational strategy. We provide the option of creativity to the students. External rewards lose their significance after sometime.

Teaching cycle



Planning

- Planning and making decisions about instruction are among the most important aspects of teaching because they are major determinants of what is taught in schools and how it is taught.
- The traditional perspective of planning is based on rational-linear models characterized by setting goals and taking specific actions to accomplish desired outcomes.
- Success of instruction depends upon planning. Traditional model is being very much in use in Pakistan and other countries.
- The knowledge base suggests that teacher planning and decision making do not always conform to rational-linear planning models. Newer perspectives on planning put more emphasis on planners' nonlinear actions and reflections. Linear fashion focus on goals. Nonlinear fashion focus on process.
- A third form of teacher planning called mental planning, is based on reflective thinking prior to the construction of more formal plans and imaging and mental rehearsal prior to presenting particular lessons. Mental process needs to be their while planning.

Planning phases

- Teacher planning is multifaceted but relates to three phases of teaching:
- Prior to instruction

- During instruction
- And after instruction

Teacher planning is not only confined to the planning stage only. It is also in implementation and evaluation stage. Teacher not only makes the decisions on copy pencil tests. He also makes the decisions in implementation process. He makes vigorous decision while he is teaching in the class.

Diversity of students

All the students in the class have different needs. McCarthy makes a 4MAT model on the diversity of students.

This model has four parts.

Meaning (Why)

In meaning there are functions of connect and attend. There should be connection of current knowledge with the prior knowledge of students. In attend part we will see that what the individual experiences of students are.

Concepts (What)

Its functions are image and inform. In this step we will tell the students imagine what new expressions look like. In this part teacher can tell the students to brainstorm. Teacher may ask them to come up with new ideas. Then the part of giving information comes.

Skills (How)

Its functions are practice and extent. We know that practice is of different kinds. In this step we provide the opportunity to the students to practice the known information. For example we have told about grammar rules to the students and then we will tell them to apply and practice those rules. Extent is also a skill. Skill should be automatic. In extent teacher give the opportunity of extended practice. Extended practice leads to overlearning.

Adaptation (If)

Its functions are refine and problem. One a skill is achieved students should be able to relate or refine that skill to their practical life. Performance includes find connections and innovations.
4 MAT model is very much comprehensive. Problem solving skill is the function of right brain.

Planning of lesson must be based on the above four points.

Assessing students learning

To assess the students according to the define objectives is the simple method. But if we use 4 MAT model, we have to assess the students on all four points (meaning, concepts, skills and adaptation). We have to assess the students according to our teaching models that we are using.

Lesson No. 44

TEACHING TOOLS

Objectives:

- Teaching tools
- Visual aids
- Audio aids

What are these objects?

- Textbook
- Supplementary Readers
- Computer programmes
- Multimedia
- Worksheets
- Visual charts
- Videos
- Audios
- Models

Definition of tools:

Purpose of tools is to get things done easily, swiftly and quickly. So, teaching tools means that all those things which help the teacher in planning instruction and ensure students learning. The most important teaching tool or teaching resource is the teacher himself. The tool which is mostly present in every classroom is **textbook.**

1. Textbook as a tool:

The textbooks serve the following purpose:

- **Information through text and pictures**
- **Questions for thinking**

There are some books which are based on very good information but the missing element in these books is thinking questions. A teacher must try to construct questions on their own to ensure students learning.

2. Supplementary readers:

Supplementary readings are those which supplement your textbook knowledge. If children use to read some books other than textbooks, parents usually discourage them. Supplementary readings are very important tool for learning. Benefits of supplementary readings are:

- **Extend already learnt knowledge**
- **Extend vocabulary**

- **Extend imagination**
- **Extend and develop higher order thinking**
- **They make children autonomous learners**

Supplementary readings provide extensive information on a topic. All these things depend on the quality of your supplement material. These also help in making the students "independent learners." Purpose of it is to enhance students reading. We need to use all these things to develop our students thinking to make them autonomous learners.

3. Computer Programmes:

- **Power point**
- **Word**
- **Excel**
- **Internet**

These all programmes can serve as teaching tool. Students are using internet for surfing and information they get is very vast. If teacher is using these things to prepare a lesson with pictures etc. and using multimedia technology, these are also serving as a teaching tool. Graphic organizers are very good teaching methods teachers use because they store more information to mind rather than information provided in words.

4. Videos:

Videos are very often used by teachers. Experienced teachers mostly used videos because they know the classroom management problems and how to handle them.

- **Teacher's lectures**
- **Expert's talks/ interviews**
- **Classroom discussions**
- **Cartoons**
- **Children films**
- **Art work videos**
- **Science experiments videos**
- **Virtual experiment videos**

A teacher must ask questions to the students by giving pauses in the video or prepare a worksheet in the sequence of video and ask the students to solve it. If teacher is presenting these things during video, then he is making effective use of teaching tool.

5. Audios:

- **Children's own recording to identify their strengths and weaknesses in speech.**
- **Pronunciation lessons**
- **Rhymes**

Video tapes can be used mostly in English and Urdu lessons where you want to enhance students speaking skills. You can record the voice of the students and ask them to identify their own mistakes. This can enhance their evaluation skills.

6. Classrooms and schools as a teaching tool:

- **Human resource**
- **Teaching kits (water bottles, books, pencil box, bags, teacher's bag) - School lawn plants**

The material present in children's bags or geometry boxes are very helpful because they are of different colors and shapes. You can ask the students to use them for descriptive writing.

How to make learning tools?

There are four steps to make effective learning tools:

- **Identify the purpose**
- **Identify the strategy**
- **Select or make a tool**
- **Evaluate the success of tool.**
- **Use waste material or cheap material to make teaching tools**

Technology as a tool:

We are living in the age of information. We teachers today have very limited information. How can we enhance our own and students' information? There are many internet sources e.g. one is given for reference:

http://www.khanacademy.org

This website has 2700 videos and these are easily downloadable. These videos are of every subject and comprises of very simple to complex mathematics, chemistry problem etc. So, technology has brought revolution.

Tools for students' learning:

All the tools discussed above are selected according to the purpose. If the purpose is to give information to the students then textbooks and technology are the best tools to use in class.

Tools for teacher's learning:

Tool	Purpose
Reflective logs	To plan for instruction
DART exercises	To diagnose students reading skills
Spelling error analysis	Spellings
Students' notebooks	Formative
Observational checklists	Psychomotor skills assessment
Students' feedback	To plan for instruction
Students' work	Formative assessment
Technology	New learning

Reflective log: A teacher will write the reflective log of his/her teaching that how the lesson goes on, what and how the students learn etc. If the teacher do not reflect on his present lesson, he could not plan effectively for the next lesson.

DART exercises: these exercises are very often used by teachers to diagnose students' reading skills.

If you want to assess student's spellings then we have to check that what type of spellings errors they make. So we have to go for spelling error analysis.

If we want to learn about students' learning on a particular topic then we will analyze the tests of our students. And we will also analyze their notebooks.

If I want to plan for effective instruction, I may ask the students to give me feedback.

Lesson No. 45

EFFECTIVE TEACHING

This is the last lecture of the course of general method of teaching. People cannot help us always we must help ourselves. And for this purpose, the best thing is to keep record of everything. Teaching is about growth (growth of teacher as well as of learner). For the growth it is necessary to reflect all those things we do. Never say we can go without planning. Always plan before going to the classroom and always reflect on your practices. Today's lesson is the recap of all the previous lectures.

Content

- Teacher's assumptions
- Learning as motivation
- Learning as fun
- Learning theories
- IPT
- Lesson planning
- Taxonomies
- Teaching vs learning activities
- Essential question
- Image of child

What is teaching?

- Is it about teaching subjects?
- Is it about developing certain behaviours?
- Is it about helping pupils get jobs in their later life?
- Is it about enlightenment?

These are all secondary purposes; basic purpose is to produce good citizens.

Assumptions of teaching

- Classrooms are isolated places
- Education is about learning content of subjects.
- Discovery learning means exploring static facts and concepts.
- Physical education, debates, music, art, community etc are essentially not main curriculum.
- Silence promotes learning.

Whatever we are teaching to the students it must constructively reflect to the student's houses or communities. Because classrooms and schools are the part of society.

Education is not about teaching the subjects but it is the method of developing the skills. It is developing the responsible attitudes towards society.

We mostly focus on activity base learning or discovery learning. Discovery learning is about exploring the static facts which are already exist in the society. Teaching is much more than that, it is about knowledge creation.

Education should focus on the holistic development of child. All these things are not the part of the curriculum but the essential of curriculum.

Active learning promotes actual learning. Silence does not promotes learning. We need to promote the students learning.

Vygotsky's theory

Vygotsky's theory included four major ideas. They are:

1 Children construct their own knowledge.
2 Language plays an important role in cognitive development.
3 Learning can lead development.
4 Learning cannot be separated from the social context in which it occurs.

Zone of Proximal development

- This concept was also established by Vygotsky.
- The gap between actual and potential level of a child is Zone of Proximal Development.

Diversity

Children think different, they very in their abilities. Teacher is same but the students are all different. We cannot expect the same thing of all students. We can have a minimum expectation from the students but we cannot expect the same thing to measure.

Educational equity

Social context is a wide concept and it also includes equity.

"Schools not only teach children, but they also raise them".

(Sousa, 2003)

"What students are taught in the schools affect the ways they will thereafter see and treat others".

(Schlesinger, 1993)

- Equity means that all students are treated equally well and that all school resources are shared equally.
- Schools have diverse learners and they must celebrate equity.

Facts of IPT

- Images are much economical and take less space in our working memory than ideas expressed in words.

- A picture is worth a thousand words. Perhaps an overstatement but pictures and images can represent a great deal of information in a very efficient way.

Taxonomies

We have talked about taxonomies. The most important taxonomy is Bloom's taxonomy. This taxonomy is about cognitive domain.

Levels of Bloom's cognitive domain

1. **Knowledge**
2. **Comprehension**
3. **Application**
4. **Analysis**
5. **Synthesis**
6. **Evaluation**

Psychomotor domain

This is about the physical movements.

Hierarchical levels of Simpson's taxonomy

1. **Perception**
2. **Set**
3. **Guided response**
4. **Mechanism**
5. **Complex overt response**
6. **Adaptation**
7. **Origination**

Affective domain

This is about the attitudes and behaviours.

Hierarchical levels of Bloom's and Krathwohl's taxonomy.

1. **Receiving**
2. **Responding**
3. **Valuing**
4. **Organization**
5. **Characterization**

Planning

Planning equation

"Less planning leads to less learning".

(Walsh, 1992)

- Planning = Content + Method
- Example of a driver going to a new place who refers to the map more often as compared to the one who has been there for quite many times. **Post lesson activities**

These activities includes:

- Evaluating lesson plans
- Evaluation unit plans

Evaluation of student's learning

- What did my students learn?
- What did my student not learn?
- What was interesting to the students?
- What was difficult to the students?
- What evidence do I have for three findings?
- What will they learn in future?

Learning activities always involves the learners.

Essential vs unit questions

Essential questions	Unit questions
Must a story have a moral, hero and villain?	What is the moral of story? Who is the hero in the story?
Who is a friend?	Are Pakistan and Iran good friends?
Do we always mean what we say and say what we mean?	What are sarcasm, irony, and satire? How do different genres help us in c0mmunicating without saying what we mean?

What is a child?

"Is child a "tabula rasa" an empty vessel to be filled by knowledge".

(John Locke)

"Is a child biologically learned being? What is learned by one organism may be transmitted biologically to others".

(Darwin)

"Is a child natural discoverer?"

(Bruner)

"Are all children perfectly designed organisms, ready to learn from their surroundings so as to grow into various adults, but due to the malign influence of corrupt society? They often fail to do so".

(Rousseau)

"Does a child learn according to his/her interests?"

(John Dewey)

- We select our activities according to our own image of child.
- We end our lesson on "Less is more".