



B.ED. PART-I (SEM.-I)

PAPER-III

Teaching-Learning Process

UNIT- B

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LESSON NO :

UNIT-B

- 2.1 : Teaching styles: Meaning and concept, implications for classroom teaching.
- 2.2 : Learning styles: meaning, definitions, and concept, implications for class room environment.
- 2.3 : Learning environment: Meaning, need for organisation, procedures, planning spaces for learning.
- 2.4 : Teaching and learning about cognitive processes; Teaching concepts through discovery, exposition and in diverse classrooms.

TEACHING –LEARNING PROCESS

LESSON NO -2.1

**TEACHING STYLES - MEANING , CONCEPT AND IMPLICATIONS FOR
CLASSROOM TEACHING**

STRUCTURE

2.1.1 OBJECTIVES

2.1.2 INTRODUCTION

2.1.3 MEANING AND DEFINITIONS OF TEACHING STYLES

2.1.4 CONCEPT OF TEACHING STYLE

2.1.4.1 CLASSIFICATION OF TEACHING STYLES

2.1.5 IMPLICATIONS OF TEACHING STYLES FOR CLASSROOM
TEACHING

2.1.6 SUMMARY

2.1.7 KEY CONCEPTS

2.1.8 SUGGESTED QUESTIONS

2.1.9 SUGGESTED READINGS AND WEB SOURCES

2.1.10 SELF CHECK EXERCISE

2.1.1 OBJECTIVES

After going through this lesson students will be able to-

1. Define teaching styles.
2. Describe the concept of teaching styles.
3. Explain the types of teaching styles.
4. Differentiate between various types of teaching styles.
5. Understand the implications of teaching styles for classroom teaching-learning process.
6. Know their own teaching style.
7. Apply different teaching styles to their real classroom teaching sessions.

2.1.2 INTRODUCTION

As we all know that we all have our own style of learning. In any classroom situation each student has his/her own individual learning styles, in the same way teachers have their own unique teaching styles that makes them unique and works best for them. The main focus of teaching is to facilitate learning. In a classroom teaching activities are designed to bring changes in the behavior of the learner. As it is also mentioned in the very first line in the report of Kothari Education Commission (1964-1966) "India's destiny is being shaped in her classrooms." Teaching process ultimately leads to the formation of beliefs by developing behavior of the learner. So it is very important for a teacher to be aware of his preferences for the styles of teaching while creating and delivering instruction based upon the objectives of teaching.

2.1.3 MEANING AND DEFINITIONS OF TEACHING STYLES

No two teachers are alike, and any teacher with classroom teaching experience will agree that their style of teaching is uniquely their own. Because teachers have to teach children and there are more than one way to teach children various things. An effective teaching style engages students in the learning process and helps them develop critical thinking skills. Traditional teaching

styles have evolved with the advent of differentiated instruction, prompting teachers to adjust their styles toward students' learning needs.

Definitions

According to Psychology Dictionary: Teaching style is “the manner of expression that distinguishes the work of a particular artist or group of artists.”

Teaching style: "Each teacher has their own teaching style that includes effectiveness and mastery of subject matter." These are the attributes of a teacher that define their style, methods and behaviour in the classroom.

Teaching style is “ the way through which a teacher teaches his students in a particular style”.

2.1.4. CONCEPT OF TEACHING STYLE

Just as no two students learn something with the same method in the same way no two teachers are alike as they have their own style of teaching and influencing the students. Teaching style says something about a teacher, or we can also say that teaching styles describes the effectiveness of a teacher. It's based upon the values carried by a teacher toward education and the philosophy he/she holds about education, what subject area (or areas)he/she teach, demography of the classroom, mission statement of the school etc. Knowing the learning styles of students learn can also play an important role in teaching style of a teacher. Teachers who are able to discover their teaching style according to the learning needs of the students can do wonders in their career and can work for the betterment of the students. As they will be able to know exactly what are their teaching preferences and what are the learning preferences of their students' and with this how they can meet the objective of teaching and learning.

The effectiveness of a teacher depends upon the teaching styles he/she selects for teaching keeping into consideration the nature of the subject matter,

the difficulty of the content, utility of the subject, phase of the course, and many other factors related to the learner eg. Maturity level, motivation and readiness etc. By doing so, they encourage and inspire students to do their best at all times throughout the course of study.

Short In Text Questions

1. Define teaching style.
2. For a teacher what should be the criteria for selecting the best teaching style for effective classroom teaching?

2.1.4.1. Classification of teaching styles

Teaching styles can be classified into various classes depending upon the viewpoints of various educationists:

Anthony Grasha (1996) identified five teaching styles for classroom teachers:

1. Expert
2. Formal Authority,
3. Personal Model
4. Facilitator
5. Delegator

Behar-Horenstein (2006) and many other studies distinguished between:

- (a) Teacher-centered teaching styles
- (b) Student- centered teaching styles

Natasha Quinonez in 2014 described the following list of teaching styles and highlights the five main strategies teachers use in the classroom.

1. Lecture style
2. Coaching style

3. Activity style
4. Group style
5. Blended style

1. Lecture style

Salient features of lecture / authority style:

1. This is a traditional and formal approach to teaching.
2. This model is teacher-centered.
3. It includes frequent and lengthy lecture sessions or one-way presentations.
4. Students are passive listeners and are expected to take notes or absorb information.
5. This style is acceptable for certain higher-education disciplines or stage settings having large groups of students.
6. This is most suitable for subjects like history that necessitate memorization of key facts, dates, names, etc.
7. It is a questionable model for teaching small children as there is little or no interaction with the teacher.
8. It lacks individualized instruction and attention towards children.
9. After some time students may lose interest in the lecture.

2. Coaching style

Salient features of coaching style:

1. The formal authority role retained by the demonstrator.
2. Role of a teacher is to demonstrate his expertise by showing students what they need to learn and understand.

3. This style provides teachers the opportunities to incorporate a variety of formats including lectures, multimedia presentations and demonstrations.
4. Although it's well-suited for teaching mathematics, music, physical education, arts and crafts.
5. With this style sometimes in larger classrooms teachers find it difficult to accommodate students' individual needs.

3. Activity style

Salient features of activity style:

1. This style promotes self-learning.
2. Facilitators help students to develop critical thinking skills and retain knowledge that leads to self-actualization.
3. In this approach teachers function as advisors who help students in learn by doing.
4. This style trains students to ask questions and helps develop skills to find answers and solutions through exploration.
5. This style is ideal for teaching science and similar subjects.
6. Teacher interacts with students and prompt them to discover and inquire. .

4. Group style

Salient features of Group style:

1. This is considered as a modern style of teaching.
2. Teacher is not a traditional authority figure in this style.
3. The teacher plays the role of an observer.

4. Teacher guides the students in a group setting to accomplish tasks and learn what works or doesn't.
5. It emphasizes guided discovery and inquiry-based learning.
6. Students work as a team toward common goals.
7. This style is best-suited for the subjects that require lab activities, such as chemistry and biology.

5. Blended style

Salient features of Blended style:

1. Blended style, follows an integrated approach to teaching.
2. It blends the personality and interests of a teacher with students' needs and curriculum.
3. This approach incorporates different aspects of the various styles and gives teachers flexibility to develop a personal style that's best for their coursework and students.
4. It follows inclusive approach of combining teaching style clusters and enables teachers to develop their teaching styles according to student needs and appropriate subject matter.
5. Hybrid style runs the risk of trying to be too many things to all students, prompting teachers to spread themselves too thin and dilute learning.

P. B. Thornton classify and describe teaching styles according to the three Ds: Direction, Discussion, and Delegation.

- A. Direction,
- B. Discussion and
- C. Delegation.

- A. The direction :** In this style the task experience is low. It promotes learning through listening and following directions give by the teacher. The teacher instructs the students. In the teaching sessions with this style, the teacher tells the students what to do, how to do it, and when it needs to be done. The teacher provides information to the students via lectures, demonstrations, assigned readings, audio/visual presentations, role playing, and various other means. Primarily students gain information by listening to the lectures, taking notes, doing role plays, and they practice what they are told to do.
- B. The discussion :** In this style the task experience is higher than the direction style. It promotes learning through interaction. This style WAS practiced by Socrates. In this the teacher encourages critical thinking and lively discussion by asking students to respond to challenging questions. The teacher acts as facilitator and guides the discussions to a logical conclusion. Students learn to have opinions and to back them up with facts and data.
- C. The delegation :** In this style the task experience is very high. This promotes learning through empowerment. With this style, the teacher assigns tasks that students work on independently, either individually or in groups.

In the nutshell we can say that using an appropriate mix of teaching styles helps students to learn, grow, and become more independent. Too much reliance on one style causes students to lose interest and become overly dependent on the teacher. Theoretically, the more teachers emphasize student-centric learning the harder it is to develop a well-focused style based on their personal attributes, strengths and goals. A teacher should know that not all students respond well to one particular style. Although today's ideal teaching style is not an either/or

proposition but more of a hybrid approach that blends the best of everything a teacher has to offer.

Short In Text Questions

- 1 Define teaching style.
- 2 Classification of teaching style given by Anthony Grasha.

2.1.5 IMPLICATIONS OF TEACHING STYLES FOR CLASSROOM TEACHING

Today's teachers must develop instructional styles that work well in diverse classrooms. Effective teaching methods engage gifted students, as well as slow-learning children and those with attention deficit tendencies. This is where differentiated instruction and a balanced mix of teaching styles can help reach all students in a given classroom — not just the few who respond well to one particular style of teaching. The transference of knowledge from expert to student is an art form as well as a skill. Knowing how to engage students begins with selecting the teaching style that's right for a teacher. Even though one may prefer one's teaching style over another, but one must find the style that works best for his/her students. A teacher should try different styles to meet different objectives, and always challenge himself/herself to find ways to reach each student. Different teaching styles have following implications for the classrooms:-

1. General to specific: Start with the general introduction about the topic before teaching into specifics.
2. Be clear and concise: Students need to know exactly what they must do to succeed and by what criteria their work will be evaluated. Clear goals, specific deadlines, and concise directions increase student motivation and eliminate confusion.

3. Provide sufficient detail: Teacher should provide sufficient details and information to the students regarding the topic under discussion. Sometimes there will be a communication breakdown when important details get omitted and instructions are not clear to the students.
4. Prepare questions in advance. Great discussions don't just happen. Ask one question at a time. Be open, curious, and interested in learning what each student thinks.
5. Don't allow one or two students to dominate the discussion. Consider everyone's ideas and opinions. Gently draw out students who seem insecure and reticent to participate. Don't allow one or two students to dominate the discussion.
6. Allow students to raise questions.
7. Assign research projects/ Assign team projects. Teacher should select a team leader, define roles and responsibilities, and hold each other accountable for completing the project on time. Let students show you what they can do when working independently on a topic that's important to them.
8. Effective Teachers and teaching styles: It has been said that effective teacher teaches effectively. He has mastery over his subject. He incorporates the learning needs of all the students of his class. He is both warm and demanding. Being warm means caring and emotional support for students. Being demanding—in the good sense—means expecting something from your kids, both in terms of academic work and behavior.
9. Authoritarian Teachers and teaching styles: in this category the teacher does not tolerate the behaviour that is not acceptable in the classroom. Support and positive reinforcement, are rare. The teacher may use a loud voice to get the attention of her students. Teacher may get angry when students don't follow his directions. The "benefit" of this style is that the

teacher frequently gets the immediate compliance from her students. The cost of the authoritarian style includes student anxiety and minimal long-term positive effects. Students may comply out of fear, this teaching technique rarely produces behavioral changes that last over time.

10. Detached teacher and teaching style: The detached teacher tends to be neither caring nor demanding. Students who need extra emotional support do not get it from him/her, and students who need firm behavioral limits do not get that either. The detached teacher may miss important “warning signs” from students who are having trouble, academically or behaviorally. Other students may withdraw and feel unimportant.
11. Disciplined and Planned teacher and teaching style: This type of a teacher is the ideal. This teacher has a positive, kind and supportive relationship with the students. Teacher has an effective discipline plan and his classroom is orderly, the students trust him and respect him. There is more time for academics. This teacher feels empowered and energized because when he observes positive growth and development in the students. Students feel safe as well as capable.
12. Interactive classrooms: the classrooms of 21st century are loaded with technology. Laptops and tablets, videoconferencing and podcasts in classrooms play a vital role in today’s teaching styles. With technology in mind, it is imperative that teachers assess their students’ knowledge while they are learning. The teacher can discover knowledge gaps that should have been detected during the active learning phase.
13. Understanding the difference between Knowledge and information: Knowledge implies a complete understanding, or full comprehension, of a particular subject. A blend of teaching styles that incorporate facilitator, delegator, demonstrator, and lecturer techniques helps the broadest

range of students acquire in-depth knowledge and mastery of a given subject. Whereas on the other hand information leads to passive learning, and includes memorization of facts for short term objectives.

Regardless of what style a teacher adopts, it's important for teachers to develop positive attitudes, set goals and establish high expectations for students. While developing their own teaching styles teachers should keep in mind the three goals (i) effective classroom management skills (ii) mastery of the subject and (III) positive expectations from students along with the primary objective of teaching learning process i.e. student learning.

Although it is not the teacher's job to entertain students, rather it is important to engage them in the learning process. Selecting a style that addresses the needs of diverse students at different learning levels begins with a self-evaluation which means knowing your own strengths and weaknesses as a teacher. As soon as the teacher develops his own teaching style and integrate that with effective classroom management skills, teacher will learn what works best for his personality and curriculum.

Short In Text Questions

1. Enlist the teaching styles given by Natasha Quinonez.
2. Salient features of Lecture Style.
3. Explain Activity Style.
4. Differentiate between Blended Style and Lecture Style.

2.1.6 SUMMARY

There is no one best teaching style. Effective teachers use a variety of styles, and they know how and when to choose the most appropriate one for the specific situation. There can be various types of teaching styles. There are Teacher-centered teaching styles and Student-centered teaching styles. Then we have another classification of teaching styles is – 1. Lecture style 2. Coaching

style 3. Activity style 4. Group style 5. Blended style. P. B. Thornton described three teaching styles 1. Direct — Tell students what to do 2. Discuss — questions and listen 3. Delegate — Empower students . It is abundantly clear that today's teachers are responsible for students with a diverse range of learning abilities. In short, modern methods of teaching require different types of teachers — from the analyst/organizer to the negotiator/consultant. While developing their own teaching styles teachers should keep in mind the three goals (i) effective classroom management skills (ii) mastery of the subject and (III) positive expectations from students along with the primary objective of teaching learning process i.e. student learning. Today's teachers must develop instructional styles that work well in diverse classrooms. Effective teaching methods engage gifted students, as well as slow-learning children and those with attention deficit tendencies. This is where differentiated instruction and a balanced mix of teaching styles can help to reach all students in a given classroom — not just the few who respond well to one particular style of teaching.

In the words of **Parker Palmer**, “ Good teachers join self, subject and students in the fabric of life.”

2.1.7 KEY CONCEPTS

(a) Teaching style is “ the way through which a teacher teaches his students in a particular style”.

(b) Lecture style: It includes frequent and lengthy lecture sessions or one-way presentations.

(c) Coaching style: Teacher demonstrate their expertise by showing students what they need to learn and understand.

(d) Activity style: Help students to develop critical thinking skills and retain knowledge that leads to self-actualization.

(e) Group style: Teacher guides the students in a group setting to accomplish tasks and learn what works or doesn't.

(f) Blended style: This approach incorporates different aspects of the various styles and gives teachers flexibility to develop a personal style that's best for their coursework and students.

2.1.8 SUGGESTED QUESTIONS

Q1. Define teaching styles? Discuss the importance of teaching styles for a teacher.

Q2. Explain the classification of teaching styles given by various educationists.

2.1.9 SUGGESTED READINGS AND WEB SOURCES

1. R.A.Sharma,: Technology of Teaching
2. R. A Sharma : Technological Foundations Of Education
3. S.S.Chauhan : Innovations in Teaching-Learning Process
4. Agyajit singh and Richa Sharma : Teaching –Learning Process

Web sources:

1. edutechwiki.unige.ch/en/Teaching_style
2. [parentmagic.com/.](http://parentmagic.com/)
3. crlt.umich.edu/tstrategies/tsts

2.1.10 SELF CHECK EXERCISE:

FILL IN THE BLANKS

1 goals and directions increase student motivation.

2 Teacher should provide sufficient..... and to the students regarding the topic under discussion.

3 classroom are loaded with laptops, tablets and videoconferencing.

4 Detached teachers are not very

5 teaching style leads to the inculcation of learning.

Answers : (1) clear , concise (2) details , information (3) interactive (4) disciplined

(5) group , self

LESSON NO -2.2

**LEARNING STYLES - MEANING , CONCEPT AND IMPLICATIONS FOR
CLASSROOM TEACHING**

STRUCTURE

2.2.1 OBJECTIVES

2.2.2 INTRODUCTION

2.2.3 MEANING AND DEFINITIONS OF LEARNING STYLES

2.2.4 CONCEPT OF LEARNING STYLE

2.2.4.1 TYPES OF LEARNING STYLES

2.2.4.2 CLASSIFICATION OF LEARNING STYLES

2.2.5 IMPLICATIONS OF LEARNING STYLES FOR CLASSROOM TEACHING

2.2.6 SUMMARY

2.2.7 KEY CONCEPTS

2.2.8 SUGGESTED QUESTIONS

2.2.9 SUGGESTED READINGS AND WEB SOURCES

2.2.10 Check self Exercise

2.1.1 OBJECTIVES

After going through this lesson students will be able to-

8. Define learning styles.
9. Describe the concept of learning styles.
10. Explain the types of learning styles.
11. Differentiate between various types of learning styles.
12. Know the learning styles of their students.
13. Understand the implications of various learning styles for classroom environment.
14. Apply their understanding of different learning styles to the real classroom teaching sessions.

2.1.2 INTRODUCTION

With the shift from an instructional to a learning paradigm, there is growing acceptance that *understanding* the way students learn is the key to educational improvement. To achieve a desired learning outcome, one should provide teaching and counselling interventions that are compatible with the students' learning styles. Thus, 'learning style' is a concept that is important not only in shaping teaching practices, but also in highlighting issues that help faculty members and administrators think more deeply about their roles in facilitating student learning. In this lesson we will discuss some important learning styles and the implications of learning styles in classroom environment.

2.1.3 MEANING AND DEFINITIONS OF LEARNING STYLES

Styles influence how students learn, how teachers teach, and how the two interact. Each person is born with certain tendencies toward particular styles, but these biological or inherited characteristics are influenced by culture, personal experiences, maturity level, and development. Style can be considered a "contextual" variable or construct because what the learner brings to the

learning experience is as much a part of the context as are the important features of the experience itself.

Definitions of Learning Styles

Following are the definitions of learning styles:

1. Keefe, defines learning styles as the “composite of characteristic cognitive, affective, and physiological factors that serve as relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment.”
2. Stewart and Felicetti define learning styles as those “educational conditions under which a student is most likely to learn.”
3. Irvine & York were of the view that a student’s style of learning, if accommodated, can result in improved attitudes toward learning and an increase in thinking skills, academic achievement, and creativity.
4. Layman’s view: Learning style is an individual's unique approach to learning based on strengths, weaknesses, and preferences.
5. Learning style is an individual's mode of gaining knowledge, especially a preferred or best method.

Thus, learning styles are not really concerned with *what* learners learn, but rather *how* they prefer to learn. You have probably noticed that when you try to learn something new you prefer to learn by listening to someone talk to you about the information. Or perhaps you prefer to read about a concept to learn it, or maybe see a demonstration.

Learning styles can be defined, classified, and identified in many different way. Generally, they are overall patterns that provide direction to learning and teaching. Learning style can also be described as a set of factors, behaviors, and attitudes that facilitate learning for an individual in a given situation.

Each learner has distinct and consistent preferred ways of perception, organization and retention. Students learn differently from each other and it has been determined that brain structure influences language structure acquisition. It has also been shown that different hemispheres of the brain contain different perception avenues. Some researchers claim that several types of cells present in some brains are not present in others.

Short In Text Questions

1. Define learning style.
2. Write about your own learning style.

2.2.4 CONCEPT OF LEARNING STYLES

Effective teaching usually combines several approaches, or multi-sensory instruction, so the child uses more than one sense at a time while learning. Multi-sensory approaches work well because of the way our brain is organized. When we learn, information takes one path into our brain when we use our eyes, another when we use our ears, and a yet a third when we use our hands. By using more than one sense we bombard our brain with the new information in multiple ways. As a result we learn better. Rief (1993) says that students retain:

- 10% of what they read
- 20% of what they hear
- 30% of what they see
- 50% of what they see and hear
- 70% of what they say
- 90% of what they say and do

2.2.4.1 Types of learning styles :

Research shows us that each learning style uses different parts of the brain. By involving more of the brain during learning, one can remember more of what he learn. The Seven Learning Styles based upon the senses involved are as follows:

1. **Visual (spatial):** Students prefer using pictures, images, and spatial understanding.
2. **Aural (auditory-musical):** Students prefer using sound and music.
3. **Verbal (linguistic):** Students prefer using words, both in speech and writing.
4. **Physical (kinesthetic):** Students prefer using their body, hands and sense of touch.
5. **Logical (mathematical):** Students prefer using logic, reasoning and systems.
6. **Social (interpersonal):** Students prefer to learn in groups or with other people.
7. **Solitary (intrapersonal):** Students prefer to work alone and usually prefer self-study.

2.2.4.2 Classification of learning styles:

a) Santally and Senteni gave the following categorization:

1. Cognitive Styles
 - (i) Information Organizing (Serial/holist)
 - (ii) Information Gathering (Visual-Auditory-Kinaesthetic)
2. Cognitive Controls
 - (i) Field dependence/independence
 - (ii) Cognitive Flexibility v/s Cognitive Constriction

3. Learning Style preferences

- (i) E.g. the Honey & Mumford model (Activists, Pragmatists, Reflectors and Theorists)

b) Curry (1983, 1987), categorized different learning styles as follows:

1. Cognitive personality style: most stable and therefore less easily modified.
2. Information processing style: the way new learning is used
Social interaction style (added later): individual preference for social interaction while learning
3. Instructional preferences: least stable and dependent on cognitive style. learners' comfort and ability to gain knowledge through particular instructional methods and materials.

c) Rayner and Riding define three categories of learning styles:

1. Cognitive-centred: focus on the differences in cognitive and perceptual functioning of individual learners.
2. Learning (activity)-centred: focus on process-based means information perceiving and processing models, preference-based (individual preferences for learning situations), and cognitive skills-based (application of cognitive style to learning situations) models
3. Personality-centred

Kolb' s Taxonomy of Learning styles

David Kolb's taxonomy is grounded in his experiential learning theory and it is based on the idea that a given learning style is shaped by the transaction between people and their environment (e.g. education, career, job role). According to this theory learners have two preferred ways to deal with information:

1. Concreteness or Abstractness
2. Activity or Reflection

However, Kolb also states that the learning process itself always engages these 4 components in a cyclical fashion.

1. Events we are involved with (concreteness)
2. .. lead to reflection and information collection (reflection)
3. .. that let us develop ideas (abstractness)
4. .. that lead to decisions that in turn create events (activity)

To each of these four steps of the learning process we can associated four learning modes:

1. Concrete Experience (CE) - learning by feeling (involvement in an experience)
2. Reflective Observation (RO) - learning by reflection, watching, and listening
3. Abstract Conceptualization (AC) - learning by thinking
4. Active Experimentation (AE) - learning by doing

This results in four types of learning style preference:

- (i) Diverging: combines preferences for experiencing (CE) and reflecting (RO)
- (ii) Assimilating: combines preferences for reflecting (AC) and thinking (RO)
- (iii) Converging: combines preferences for thinking (AC) and doing (AE)
- (iv) Accommodating: combines preferences for doing (AE) and experiencing (CE)

Honey and Mumford's Typology of Learners

Based on Kolb's (1982) experiential learning model, Honey and Mumford proposed a similar categorization of individual learning styles and which seems to be popular in management education:

1. Activists: prefer to act and are well equipped to experiment (experiencing). They learn best when they were allowed immediately to do something, when they are exposed to new experiences and problems, work with others in task teams, but on the other hand learn least when they have to listen to long explanations, absorb a lot of data, follow precise instructions, read, write and think a lot on their own. Brainstorming , problem solving, group discussions, role plays, competitions, etc. are certain preferred activities.
2. Reflectors: prefer to study data and are well equipped to review (reviewing). They learn best when by observing, reviewing and thinking about what is happening and they learn least when they are rushed and have to act as leaders. Observing activities, paired discussions, coached activities, questionnaires and interviews are the preferred activities.
3. Theorists: They need to tidy up and have answers, are well equipped for concluding , learn best by studying theories, models, concepts, stories etc. They can ask questions and engage in analysis and synthesis learn very less when the activity is ill structured, no principles are taught.
4. Pragmatists: They like practical things and prefer planning. They learn better when apply new information to a real world problem, etc. They least prefer the thing which is not of an immediate benefit, etc. Case studies, discussion, problem solving are the activities they prefer.

Myers-Briggs

According to Felder (1996), this model classifies students according to their preferences on scales derived from psychologist Carl Jung's theory of psychological types. Students may be:

1. Extraverts (try things out, focus on the outer world of people) or introverts (think things through, focus on the inner world of ideas);
2. Sensors (practical, detail-oriented, focus on facts and procedures) or intuitors (imaginative, concept-oriented, focus on meanings and possibilities);
3. Thinkers (skeptical, tend to make decisions based on logic and rules) or feelers (appreciative, tend to make decisions based on personal and humanistic considerations);
4. Judgers (set and follow agendas, seek closure even with incomplete data) or perceivers (adapt to changing circumstances, resist closure to obtain more data).

Research on learning styles attempted to categorise learners by ability has produced some convincing results. For example, Kolb (1984) identified four learning styles (i.e. accommodation, assimilation, converging, and diverging) and four learning modes (i.e. concrete experience, reflective observation, abstract conceptualization, and active experimentation). Dunn and Dunn (1978) developed a comprehensive model dealing with environmental, emotional, sociological, physical, and psychological learning style elements and claimed that these elements could provide information directly to teaching strategies. However, increasing research in this field is producing burgeoning sub-categories of styles as more and more differences among learners are unveiled with each study.

Short In Text Questions

1. Enlist various types of Learning Styles.
- 2 Discuss Learning Styles given by David Kolb.
3. Describe Honey and Mumford's Typology of Learners

2.2.5 IMPLICATIONS OF LEARNING STYLES FOR CLASSROOM TEACHING

Information about learning styles can help faculty become more sensitive to the differences students bring to the classroom. It can also serve as a guide in thoughtfully and systematically designing learning experiences that match or mismatch students' styles, depending on the teacher's purpose. Matching is particularly appropriate in working with poorly prepared students and new college students, among which attrition rates are usually the highest. Some studies show that identifying a student's style and then providing instruction consistent with that style contributes to more effective learning. In other instances, some mismatching may be appropriate so that students' experiences help them to learn in new ways and to bring into play ways of thinking and aspects of the self not previously developed. Any mismatching, however, should be done carefully and with consideration for the students, because the experience of discontinuity can be very threatening, particularly when students are weak in certain areas of study.

In a study Marilee Sprenger based her recommendations for classroom learning on three premises:

1. Teachers can be learners, and learners can be teachers. We are all both
2. Everyone can learn under the right circumstances.
3. Learning is fun. Make it appealing.

She described various ways in which teachers can teach effectively. The categorization of teaching methods according to the learning styles of the learners are as follows:

1. Methods for visual learners include ensuring that students can see written words, use of pictures while describing things, drawing of timelines for various events of history and writing down instructions.
2. Methods for auditory learners include repeating difficult words and concepts aloud, incorporating small group discussions, organizing debates, writing oral reports, and encouraging oral interpretations.
3. Methods for tactile/kinesthetic learners: providing of hand-on activities/ experimentations Project assignment ,Use of visual aids and projects in the lesson, Role play field trips etc.
4. Establish curricular experiences that help students learn how to learn.
5. Inventories of learning styles and other processes can be used to help make students aware of their own preferences and strengths. Help should also be given to students to develop strategies for succeeding in courses taught in ways that are incongruent with their primary learning abilities.
6. Teachers can create opportunities for students to learn and exert self-regulation of their learning by involving the students in setting learning goals, selecting and implementing learning strategies as well as monitoring their own learning. Moreover, teachers can provide situational cues to motivate students to learn on their own.
7. Depending on how learners interact with others and within the learning situation, teachers can establish the foundation for collaborative learning strategies that can be potent methods of student learning in a large-class situation.
8. Certain instructional methods address the individual learner's preferred environment for learning and ascertain the importance of identifying and addressing individual differences in the learning process. However, they differ because some models emphasize on accommodation of individual style preferences in the instructional methods, while others on flexibility and adaptation by the learners.

Many people recognize that each person prefers different learning styles and techniques. Learning styles group common ways that people learn. Everyone has a mix of learning styles. Some people may find that they have a dominant style of learning, with far less use of the other styles. Others may find that they use different styles in different circumstances. There is no right mix. Nor are your styles fixed. You can develop ability in less dominant styles, as well as further develop styles that you already use well.

By recognizing and understanding his/her own learning styles, a teacher can use techniques better suited for his/her teaching. This improves the speed and quality of learning of students. David Merrill (2000) gave the best philosophy for using learning styles—instructional strategies should first be determined on the basis of the type of content to be taught or the goals of the instruction and secondarily, learner styles and preferences are then used to adjust or fine-tune these fundamental learning strategies. Merrill continued with the argument that most students are unaware of their learning styles and if left to their own means, they are unlikely to start learning in new ways. Thus, knowledge of one's learning styles can be used to increase self-awareness about their strengths and weaknesses as learners. Coffield emphasized that all the advantages claimed for metacognition (being aware of one's own thought and learning processes) can be gained by encouraging learners to become knowledgeable about their own learning and that of others.

6.6 SUMMARY

Kolb (1984) identified four learning styles (i.e. accommodation, assimilation, converging, and diverging) and four learning modes (i.e. concrete experience, reflective observation, abstract conceptualization, and active experimentation). The discussion on learning styles suggests that an instructional design should look at several issues related to cognitive styles,

learning styles, etc. each person prefers different learning styles and techniques. Everyone has a mix of learning styles. Information about learning styles can help faculty become more sensitive to the differences students bring to the classroom. It can also serve as a guide in thoughtfully and systematically designing learning experiences that match or mismatch students' styles, depending on the teacher's purpose.

2.2.7 KEY CONCEPTS

1. Learning style - Learning style is an individual's unique approach to learning based on strengths, weaknesses, and preferences.
2. Aural : related to sound (auditory senses).
3. Cognitive Styles- related to knowledge, Information organizing and gathering.
4. Diverging: preferences for experiencing (CE) and reflecting (RO)
5. Assimilating: preferences for reflecting and thinking.
6. Converging: preferences for thinking and doing.
7. Accommodating: preferences for doing and experiencing.

6.8 SUGGESTED QUESTIONS

Q 1. Define learning style and discuss various types of learning styles in detail.

Q2. Describe Kolb's learning styles in detail.

Q 3. Discuss the importance of learning styles in teaching –learning process.

2.2.9 SUGGESTED READING AND WEB SOURCES

1. Understanding the learner and learning process- Agya Jit Singh

2. Teaching – learning process - Agya Jit Singh and Richa Sharma
3. Innovations of teaching – learning process - S.S. Chauhan
4. Technology of Teaching – R.A.Sharma

WEB SOURCES:

1. psy.gla.ac.uk/~steve/lstyles.htm
2. edutechwiki.unige.ch/en/Learning_style

2.2.10. SELF CHECK EXERCISE

True/ False

1. Learning style is an effective method of teaching. (T/F)
2. According to Reif student retains 50% of what they see. (T/F)
3. Honey and Mumford divided the learners into four categories. (T/F)
4. Rayner and Riding define three categories of learning styles. (T/F)
5. Students using verbal learning style always prefer using words pictures.(T/F)
6. Kolb's taxonomy is based on his theory of experiential learning.(T/F)
7. Pragmatists prefer practical things and also prefer planning.(T/F)

Answers: (1). False (2) False (3) True (4) True (5) False (6) True
(7) True

Teaching Learning Process

Lesson no. – 2.3

**Learning environment: meaning, need for organization, procedures,
planning spaces for learning.**

Structure

- 2.3.1 Objectives
- 2.3.2 Introduction
- 2.3.3 Meaning of learning environment
- 2.3.4 Definitions of learning environment
- 2.3.5 Elements of learning environment
- 2.3.6 Functions of learning environment
- 2.3.7 Need for organization of learning environment
- 2.3.8 Procedure for organization
- 2.3.9 Planning spaces for learning
- 2.3.10 Summary
- 2.3.11 Key concepts
- 2.3.12 Suggested questions
- 2.3.13 Suggested readings and web sources

2.3.1 Objectives

After going through this chapter students will be able to-

1. Define learning environment.
2. Understand the concept of learning environment.
3. Describe the elements of learning environment.
4. Discuss the functions of learning environment.
5. Explain the procedure of organization of learning environment.
6. Understand the need for organizing learning environment.
7. Discuss the importance of planning spaces for learning.

2.3.2 Introduction

A teacher spend a great deal of time in the classroom, beginning in kindergarten and extending for years beyond. Have you ever noticed what the teacher did to make learning more inviting? Was it colorful posters, clear and consistent rules, and fun and interesting teaching methods? If so, you were lucky to have a teacher who paid close attention to the **learning environment**, or the physical, psychological and instructional atmosphere the positive learning environment in the classroom is vital to student success and impacts students in many ways. A **negative learning environment**, or setting that adversely affects student learning in many ways, such as low student achievement, poor behavior, student anxiety, or depression. An effective teacher works hard to maintain a **positive learning environment**, or one that allows students to feel comfortable and confident as learners.

2.3.3 Meaning of learning environment

Learning environment refers to the diverse physical locations, contexts, and cultures in which students learn. Since students may learn in a wide variety of settings, such as outside-of-school locations and outdoor environments, the term is often used as a more accurate or preferred alternative to *classroom*, which has more limited and traditional connotations—a room with rows of desks and a chalkboard, for example.

The term learning environment also encompasses the culture of a school or a class. It focuses on the presiding ethos and characteristics, including how individuals interact with and treat one another. It also includes the ways in which teachers may organize an educational setting to facilitate learning—e.g., by conducting classes in relevant natural ecosystems, grouping desks in specific ways, decorating the walls with learning materials, or utilizing audio, visual, and digital technologies. And because the qualities and characteristics of a learning environment are determined by a wide variety of factors, school policies, governance structures, and other features may also be considered elements of a “learning environment.”

Scholars of the field may also argue that learning environments have both a direct and indirect influence on student learning which includes their engagement in what is being taught, their motivation to learn, and their sense of well-being, belonging, and personal safety. For example, learning environments filled with sunlight and stimulating educational materials would likely be considered more conducive to learning than dull/neutral spaces without windows or decoration, as would schools with fewer incidences of misbehavior, disorder, bullying, and illegal activity. Interaction of teacher/adults with students and interaction on of students with one another is also an aspects of a learning environment, “Positive learning environment” or “Negative learning environment” are commonly used in context to the social and emotional dimensions of a school or class.

2.3.3.1 Definitions of learning environment:

- 1. Learning environment** refers to the diverse physical locations, contexts, and cultures in which students **learn**.
- 2.** Mosby's Medical Dictionary- the sum of the internal and external circumstances and influences surrounding and affecting a person's learning.
- 3.** Learning environment refers to the whole range of components and activities within which learning happens.

4. Learning environment is the physical or virtual setting, in which learning takes place.

In a technical point of view, a learning environment relies on computer supported systems, such as learning management systems, a combination of various educational technologies, virtual environment etc. Children learn in a variety of ways. For example memorization, hands on, peer or individual learning, problem inquiring, or worksheet based etc. The different ways in which a child learns is partially related to the type of learning environment available to him. These learning environments also affect child's ability and motivation to learn.

2.3.3. 2 Elements of Learning Environment

A learning environment comprised of following elements:

- 1) Physical environment
 - 2) Psychological environment
 - 3) Instructional environment
- 1 Physical environment: The use of space includes how furniture is arranged and organized, how materials are stored and maintained, how clean the classroom is and the overall color and brightness. We can't imagine a classroom that is has little light, dirt on the floors, messy bookshelves and broken supplies to be conducive for learning.
 - 2 Psychological environment: The psychological environment in the classroom is how students feel about their learning. Teacher must have specific rules and consequences posted in his/her classroom and clearly explains each to the students. He/she should have a calm, patient demeanor and be focused on helping students learn, both intellectually and socially. He/she should maintain a positive control of her classroom by being a role model for kind words and actions. Teacher must know

that students will react negatively when they feel things are unfair, unclear or are worried about getting in trouble.

- 3 Instructional environment: A teacher should know that how He/she teaches is just as important as what he/she teaches. If teacher goes too fast, doesn't explain things, or uses techniques that students don't understand, the learners won't achieve their goals. The instructional environment is the setting for all teaching. A teacher plans instruction to make sure that her students will be able to comprehend by using different teaching practices, such as lecture, hands-on activities, cooperative learning groups and plenty of small group and individual practice.

Short in text questions

1. Define learning environment.
2. Describe elements of learning environment.

2.3.4 Functions of learning environment

According to Deschryer and Peraya a learning and teaching environment ought to implement six functions:

1. Providing Information
2. Communication between teacher, learner and environment
3. Collaboration : Everyone should work in collaboration with each other
4. Produce : learning leads to behavioural change among students
5. Scaffolding-variety of instructional techniques used to make students move progressively toward stronger understanding. This will ultimately leads to greater independence in the learning process. Teachers provide successive levels of temporary support that help students reach higher levels of comprehension and skill acquisition that they would not be able to achieve without assistance. Like physical scaffolding, When the

supportive strategies are no longer needed they get removed. The teacher gradually shifts more responsibility over the learning process to the student. Scaffolding is often used to bridge learning gaps.

6. Management of necessities for the learning environment.

Development of Learning Environment

An effective learning environment is developed by focusing on four dimensions of the environment.

- **A Focus on Meaning** - meaningful learning, growth in performance, and creating processes/products that make a difference in the world. Embedding meaning in the context and artifacts of the environment.
- **Support for Each Person** - Each person should be aligned with his talents--what he like doing and what he can do best. For taking risks, environment should be safe, creating alignments with values and interests of individuals, opportunities for professional growth and provision of feedback should be there in the conducive learning environment.
- **Structure for Each Person** - It includes clear performance criteria, scope, schedule, challenge and resources.
- **Collaboration that Adds Value** - Supporting others, using effective practices such as assessment and compelling goals, add value in the development of learning environment.

2.3.5 Need for Organizing the Learning Environment

According to Sharon Longert “Classroom environments are most effective when they are literate and purposeful, organized and accessible, and, most of all, authentic” (Miller, 2008). Teaching and learning is difficult in an environment

that is cluttered, unorganized and unfriendly to kids and teachers. We spend a lot of time in our classrooms so they need to be interesting places that welcome everyone in the pursuit of knowledge. Your classroom reflects what you value, what you believe about teaching and learning, and what you know about your students. Anyone walking into that room should be able to articulate those values. Classrooms are living, breathing, changing environments. We need to constantly assess and reassess our purposes, reasoning and goals. When you are aware of the path, the students usually follow and everyone learns something in the process.

Short in text questions

1. Enlist functions of learning environment.
2. Discuss the dimensions of development of learning environment.

2.3.6 Procedure for organizing learning environment

1. The first step is to reorganize specific areas by sorting through and making piles of things to keep, things someone else may want or need, and things to throw away. Closets, bookcases, supply areas, and under and over spots need to be vacated. Arm yourself with a lot of trash bags and a cleaning spray; make sure to warn the custodian ahead of time.
2. Next, define the spaces that support your style of teaching. Create a meeting area where the students can sit comfortably, share ideas, have class discussions, and learn lessons that you model. This area can also be used when you organize your students into small groups or conduct workshop sessions. This is the primary teaching area and should have tools and materials for you to chart, read, explain, demonstrate, and model. Students can bring notebooks and pencils to the area and learn note-taking skills.

3. Table and desk arrangement is based on the available furniture, the sizes and shapes of the desks/tables, and the size/ height of the students. At any time in the school year, it may be necessary to pull the room apart and start anew, therefore it is best to have a movable situation so that there can be conversational groupings and rearrangement for testing times.
4. Every room should be print-rich. Books can be displayed and labeled in colorful bins that are organized by author, subject area, reading level, gender preference, genre, fiction, and non-fiction. Bins should be portable and not overstuffed. Students are more apt to select books that are given special attention and are displayed respectfully.
5. Involve students in the process: when they know how to use materials, where to store them, and when to use them, they become invested in the classroom. A lot of time is saved when materials are organized so that everyone in the room knows where they are and how they are used.
6. Charts and student work displays are the best evidence of teaching and learning. Display these throughout the classroom and during the entire year. The process of learning is as important as the end product.

2.3.7 Planning spaces for learning

- Traditionally, space planning has excluded the key stakeholders — instructors and students — until the very end of the sequential design process.
- A multidisciplinary, collaborative process that involves users from the beginning stages achieves pedagogical goals in addition to space-planning and technology goals.
- A classroom incorporates technology and pedagogy during planning to create a classroom that engages instructors and students alike.

Many studies and best practices in learning space design recommend using technology to enhance student engagement. With student learning and engagement at the center of the planning process, the question of whether or not to install technology in the classroom will be answered appropriately.

- **Multidisciplinary/collaborative approach:** The complexity of teaching practices, including understanding how students learn best, requires a collaborative and multidisciplinary approach. Ensuring the support of best teaching practices necessitates the combined expertise of learning strategists, instructional designers, media specialists, and faculty disciplinary expertise (writing, information literacy, etc).
- **Needs assessments:** It is important to assess the professional development needs of those engaged in teaching and learning. Evaluating the learning needs of faculty and students with respect to the use of technologies in support of best teaching and learning practices should be a first priority.
- **Learning opportunities:** For teaching to remain effective and responsive to diverse students' learning needs, faculty require opportunities to learn, to be guided in how best to design and implement their courses, and to practice (particularly using new technologies).
- **Networking:** To remain current with respect to best practices in teaching and learning in higher education, it is important that faculty and others engaged in learning space design have opportunities to collaborate and network with each other and with other universities and attend conferences that support the multidisciplinary and evolving nature of teaching practice.
- **Research and evaluation:** Learning space design needs to be informed by the growing body of literature and research in this area. This knowledge in turn must be integrated with pedagogical research and evidence in support of best teaching and learning practices.

Planning typically has been a sequential and “dis-integrated” process involving planners, architects, and lastly teachers and students. The outcome does not necessarily support teaching and learning. For example, a classroom may be equipped with a high-end computer, projector, document camera, and writing tablet and be set up in tiered rows with fixed desks, having limited provision for the professor to move among the students. This classroom succeeds in terms of the numbers of students it can accommodate and the technology it contains, but it fails when assessed from a pedagogical perspective.

Creating a learning space that engages faculty and students and puts student learning at the center is an integrated, interconnected, mutually influential, and complex process. The issues related to pedagogy must be voiced, heard, and considered during planning. Satisfaction increases when users of the classroom and study spaces on campuses are included in the process of designing and redesigning these spaces. Involving teachers and students in the space-planning process can positively impact the teaching and learning experience they have in the classroom

We strongly believe that including building planners, technology planners, teachers, and students in an integrated, interconnected, mutually influential planning process for learning space design will result in more fully engaged teachers and learners.

2.3.8 Summary

Learning environment refers to the diverse physical locations, contexts, and cultures in which students learn. Since students may learn in a wide variety of settings, such as outside-of-school locations and outdoor environments, the term is often used as a more accurate or preferred alternative to *classroom*, which has more limited and traditional connotations—a room with rows of desks and a chalkboard. A learning

environment has the following elements which make the learning environment conducive for learning : Physical environment, Psychological environment, Instructional environment. A multidisciplinary, collaborative process that involves users from the beginning stages achieves pedagogical goals in addition to space-planning and technology goals. A classroom incorporates technology and pedagogy during planning to create a classroom that engages instructors and students alike. Creating a learning space that engages faculty and students and puts student learning at the center is an integrated, interconnected, mutually influential, and complex process. The issues related to pedagogy must be voiced, heard, and considered during planning.

2.3.9 Key concepts

1. Learning environment : Learning environment refers to the diverse physical locations, contexts, and cultures in which students learn.
2. Psychological environment: The psychological environment in the classroom is how students feel about their learning.
3. Instructional environment: A teacher plans her instruction to make sure her students are able to comprehend by using different teaching practices, such as lecture, hands-on activities, cooperative learning groups and plenty of small group and individual practice.

2.3.10 Suggested questions

Q1 Define learning environment. Discuss its elements and development.

Q 2. Discuss the need and procedure for organizing learning environment.

Q 3. Describe the process of planning spaces for learning.

2.3.11 Suggested readings and web sources

1. Education and development : Inder Dev Singh Nandra
2. Teaching learning Process : Agyajit Singh and Richa Sharma

Web sources

1. http://edutechwiki.unige.ch/en/Learning_environment.
2. <http://health.tki.org.nz/Key-collections/Curriculum-in-action/Making-Meaning/Teaching-and-learning-environments>.
3. <http://insight.glos.ac.uk/tli/resources/toolkit/eal/documents/learning%20spaces.pdf>

2.3.12 Self Check Exercise

Match the columns

COLUMN -I

1. Physical environment
2. Psychological environment
3. Communication
4. Scaffolding
infrastructure

COLUMN - II

1. Often used to bridge learning gap
2. Sharing of ideas and information
3. Feelings of students about learning
4. Arrangement and organization of

Answers : 1 - (4) 2. - (3) 3. - (2) 4. -(1)

Teaching and Learning about Cognitive Processes

Structure

2.4.1 Introduction

2.4.2 Objectives

2.4.3 Teaching and Learning Process

2.4.4 Teaching and Learning about Cognitive Processes

2.4.4.1 Meaning of concept

2.4.4.2 Teaching of concepts

2.4.4.3 Teaching concepts through discovery

2.4.4.4 Teaching concepts through exposition

2.4.4.5 Teaching concepts in diverse classrooms

2.4.5 Summary

2.4.6 Keywords

2.4.7 Suggested questions

2.4.8 Suggested readings

2.4.9 Self-check exercise

2.4.1 Introduction

In every educational program, embedment of unique and different abilities of students must be involved. The teaching and learning process about cognitive processes must take care of creative and innate abilities of students. In the cognitive process an individual perceives, organizes, classifies different factors related to his/her environment. Teaching and learning about cognitive processes improves individual's problem solving ability, hence, leads to discovery learning in different situations.

4.2.2 Objectives

After going through this lesson, learners will be able to:

- Understand cognitive processes
- Understand teaching and learning process
- Comprehend teaching concepts through discovery
- Comprehend teaching concepts through exposition
- Explain teaching in diverse classrooms

4.2.3 Teaching and Learning Process

Teaching is a social process on which the political system, social philosophy and culture of every nation leave their impression. According to Morrison teaching is an intimate contact between a more mature personality (teacher) and a less mature one (student). According to Amidon teaching is an interactive process between a teacher and their students that occur during certain definable activities. According to Yoakum and Simson teaching is the means by which the experienced members of the group guide the immature members in their adjustment of life. The main focus of teaching is to facilitate learning. According to Smith learning does not necessarily issue of teaching that teaching is one thing and learning is quite other as teaching is a system of actions intended to induce learning. Burton investigated the relationship between teaching and learning and gives the following reason:

Teaching can be made effective by rating it to learning, teaching objectives can be identified in behavioural terms and appropriate learning situations may be created according to these objectives. Appropriate teaching structures may be generated for good learning. The selection of teaching aids according to teaching learning process should be done. The teaching strategies may be selected to achieve the objectives of learning.

4.2.4 Teaching and Learning about Cognitive Processes

The development of educational programs that accommodate different abilities of every individual student is important from the point of curriculum design. For this, various creative abilities in the teaching and learning process must be explored. Such innate abilities that appear to have implications for classroom teaching and learning process are referred to as cognitive style of learners. Long (1962) found an analytic cognitive style superior to a global style in serial learning performance. Guetzkow (1951) explored relationship between performance in problem solving and cognitive style and found that the more analytical an individual, the greater is his/her success in problem solving. The cognitive style of an individual has a great impact on concept identification ability. Various analytical subjects perform better than global subjects on

concept identification tasks. The individuals taught by expository method might face difficulties on criteria measures. So, the teachers can examine the efficiency of various methods of teaching globally. Also, teachers can determine the degree of instructional guidance required by students to achieve specific educational objectives. Some students utilise their idle time in independent study leading to teacher's additional participation to complete their compensatory instructional tasks.

4.2.4.1 Meaning of concept

A concept is a name for a class of stimuli which have common characteristics. These stimuli may be persons, animals, objects, ideologies or thoughts. DeCecco and Crawford defined concept attributes as the distinctive features that vary from concept to concept. The concept of a sapling is different from the concept of a tree depending upon their sizes. Concepts can be categorized as concrete concepts, relational concepts and abstract concepts. Concrete concepts depend upon direct observations. Relational concepts have special mode of relationship with respect to attributes as distance and direction. Abstract concepts are used for a specific class of feelings, ideas and thoughts.

4.2.4.2 Teaching of concepts

The teaching of concepts can be described by following steps given by DeCecco and Crawford:

- The description of the expected performance by the students after they have learned the concept. The terminal behaviour presents a specific view of the final performance expected of students. For concept learning, citing of new examples may be adequate indicators of attainment.
- Reducing the number of attributes to be learned in complete concepts and making important attributes dominant. It refers to analysing the concepts in terms of its attributes and their values. The attributes and their values must be determined before the instructions are started.
- Providing useful verbal mediators to students. It refers to the use of words which already exist in the vocabulary of the learners and may be used as attributes and attribute values for the development of the concept.
- Providing positive and negative examples of the concept simultaneously. A positive example of the concept is one which contains the attributes of the concept, whereas, the negative example of the concept is one which does not contain the attributes of the concept.
- Providing occasions for student responses and reinforcement of these responses. The feedback and reinforcement are basic learning conditions so there must be conscious effort to focus on right responses.
- Assessing the learning of concepts. It is important for a teacher to monitor their instructional program and students to monitor their own learning.

For this, a number of new positive and negative examples are presented to students and they are asked to select only positive examples.

4.2.4.3 Teaching concepts through discovery

Teaching concept means teaching a category used to group similar events, ideas or people using inductive reasoning. In teaching learning process, teacher involves students in the discussion by nurturing their intuitive thinking. Teacher encourages students to make guesses and present examples related to concept. Bruner et al. (1956) conducted research on thinking and encouraged concept learning. Bruner's work emphasized on the need for active learning and inductive reasoning as the basis of discovery. In discovery learning, the teacher presents examples and asks students for more examples and non-examples. In order to group the structure of information, students must become an active part of teaching learning process so that they can identify principles for themselves from specific examples given by the teacher. So teaching concepts through discovery is based on use of inductive reasoning in the classroom interaction. When students understand the use of specific examples in formulation of a principle their intuitive thinking develops in this approach. Teacher can encourage students in the classroom to make guesses and try to reach at conclusions based on evidences. In discovery learning, students learn by their own efforts in providing examples and non-examples. Teacher has to provide required material so that students can learn through inductive reasoning. According to Bruner's teaching concepts through discovery, teacher has to present examples and non-examples, then help students to see relationships among concepts, then use questioning skill and motivate the students to make guesses based on their imaginative power. Discovery learning refers to those instructional models that involve students in learning through discovery. Generally the pedagogical aims are threefold: promote deep learning, promote meta-cognitive skills, promote student engagement. According to Joolingen (1999) discovery learning is a type of learning where learners construct their own knowledge by experimenting with a domain and inferring rules from the results of these experiments. The basic idea of this kind of learning is that because learners can design their own experiments in the domain and infer the rules of the domain themselves they are actually constructing their knowledge. Because of these constructive activities, it is assumed they will understand the domain at a higher level than when the necessary information is just presented by a teacher or an expository learning environment. According to Borthick and Jones (2000) in discovery learning, participants learn to recognize a problem, characterize what a solution would look like, search for relevant information, develop a solution strategy, and execute the chosen strategy. In the collaborative discovery learning, participants, immersed in a community of practice, solve problems together.

To summarize the characteristics of Discovery method:

1. It is based on the principle of learning by doing.
2. It involves proper and meaningful engagement of students.
3. It reduces the dropout rate in schools.
4. It engages students in the content.
5. It provides opportunities for reflection.
6. Students participate activity in creating, integrating and generalizing knowledge.
7. Student learns at his own pace.
8. It motivates the students and gives them ownership of their learning.

4.2.4.4 Teaching concepts through exposition

Teaching concepts through exposition explores focused and organised relationship among ideas. Teacher presents material in a systematic form so that students understand the concepts. Teacher moves from general to specific and using deductive approach. When teacher presents the material in an organised way, students understand the material. In this approach teacher first explains rule or principles then examples. Then teacher is to present content in terms of basic similarities and differences. Then students are asked to relate examples. Teacher moves from wider concept to specific one so that students learn the material step-by-step and reaches to a specific solution. In the classroom interaction meaningful verbal learning takes place. Exposition refers to providing knowledge to learners by teacher or subject expert. Exposition means presentation of facts of a lesson in a definite, logical manner, understandable and simplified way so that student can apprehend difficult things in an easier way. Teaching concepts through exposition is used in all the subjects but it is more beneficial in language teaching as while exposition teacher uses simple and clear language in an interesting way. Teacher elucidates the difficult parts of the lesson in a simple manner. Teaching concepts through exposition when used according to interest and mental level of the students then it produces better results. It is a one-way process but sometimes it includes discussions. The strategy followed in this process is top-down and mainly teacher-centred because it is the teacher who decides how and what information is to be delivered. Exposition can be carried out in the context of an event like a lecture, seminar or presentation. Also it can be carried out through web, video or tele-conferencing software. Exposition uses different forms of content like text,

images, animation, audio and video. Earlier this content was used in the form of books, tapes or CDs but nowadays it is used in the form of portable platforms like iPods and e-book readers. For teaching concepts through exposition, the students must be aware of what they know and do not know about the subject. Hence, the students will be able to determine what is most relevant and most important in the subject. Whereas, other students could easily be overwhelmed by the sheer volume of undifferentiated information.

4.2.4.5 Teaching concepts in diverse classrooms

Teaching concepts in diverse classrooms emphasizes on relationship between students' prior knowledge with the current one. According to (2000) an approach to teaching concepts that also emphasizes connections with prior knowledge of students is called analogical instruction. It is useful in teaching heterogeneous classrooms. Teacher in the classroom identify knowledge that the students already have, then new material can be presented to them by relating both with examples. Teacher can use analogical instruction for teaching concepts. As the new concepts are related to the knowledge and concepts that the students already have. Teacher teaches concepts by explaining similarities and differences between the known concepts and the new concepts. Teacher has to facilitate the learning process of students with a variety of backgrounds and needs. Teacher apply number of teaching styles according to the needs of diverse learners and creates an open classroom that values the experiences and perspectives of students of whole classroom. Teachers should know that students are diverse in their cultures and ethnicity, their experiences, their learning styles and use a variety of teaching methods to promote student learning. While generalizations sensitize to important differences between groups, each individual student has unique values, perspectives, experiences and needs. Therefore, a teacher should appreciate the individuality of each student. A teacher is committed to fulfil the needs of all students and is always ready to help them in learning the material discussed in the classrooms. Teacher should use more inclusive teaching style. Teacher has to prepare multiple examples to illustrate his/her points. Teacher should help their students to distinguish between abstract, theoretical knowledge and concrete, specific experiences, to expand everyone's learning. Also, teacher uses different teaching methods to meet the variety of learning needs.

4.2.5 Summary

The teaching and learning process about cognitive processes takes care of creative abilities of students. Teaching and learning about cognitive processes improves an individual's problem solving ability and leads to discovery learning in different situations. Teaching is a social process on which the political system, social philosophy and culture of every nation depends. The focus of teaching is to facilitate learning. The selection of teaching aids on the basis of teaching

learning process should be done. The teaching strategies may be selected to achieve the objectives of learning. The development of educational programs that accommodate different abilities of students is important. A concept is a name for a class of stimuli like persons, animals, ideas or thoughts which have common characteristics. Concepts can be categorized as concrete concepts, relational concepts and abstract concepts. Teaching of concepts involve the description of the expected performance, reducing the number of attributes, providing useful verbal mediators, providing positive and negative examples, providing occasions for student responses and assessing the learning of concepts. Teaching concept means teaching a category used to group similar events, ideas or people using inductive reasoning. In teaching learning process, teacher involves students in the discussion by nurturing their intuitive thinking. Teacher encourages students to make guesses about examples related to concept. Teaching concepts through exposition focuses on organised relationship among various ideas. Teacher presents material in a systematic form so that students understand the concepts. Teaching concepts in diverse classrooms emphasizes on relationship between students' prior knowledge with the current one. Teacher in the classroom identify knowledge that the students already have, then new material can be presented to them. Teacher can use analogical instruction for teaching concepts.

4.2.6 Keywords

Concept, relationship, discovery, exposition, diverse classroom.

4.2.7 Suggested Questions

- Q. What is teaching? How it is related to learning?
- Q. Discuss teaching concept through exposition.
- Q. Explain teaching concept through discovery.

4.2.8 Suggested readings

Bhushan, A. and M. Ahuja (2002) Educational Technology. Bawa Publications, Patiala.

Saxena, S. and S. C. Oberoi (1999) Technology of Teaching. Surya Publication, Meerut.

Sharma, R. A. (2010) Technological Foundation of Education. Lall Book Depot, Meerut.

Thornell, J. G. (1976) Research on Cognitive Styles: Implications for Teaching and Learning. *Educational Leadership*, April, pp 502-504.

4.2.9 Self-check Exercise

- Teaching is an _____ process.
- Teaching concepts through discovery is based on use of _____ in the classroom interaction.
- Teaching through _____ exposition explores focused and organised relationship among ideas.
- Teacher has to _____ the learning process of students with a variety of backgrounds and needs.

- (a) Interactive
- (b) inductive reasoning
- (c) concepts
- (d) facilitate