

Q. 1 a) Differentiate between inductive and deductive reasoning.

Reasoning in artificial intelligence has two important forms, Inductive reasoning, and Deductive reasoning. Both reasoning forms have premises and conclusions, but both reasoning are contradictory to each other. Following is a list for comparison between inductive and deductive reasoning:

- o Deductive reasoning uses available facts, information, or knowledge to deduce a valid conclusion, whereas inductive reasoning involves making a generalization from specific facts, and observations.
- o Deductive reasoning uses a top-down approach, whereas inductive reasoning uses a bottom-up approach.
- o Deductive reasoning moves from generalized statement to a valid conclusion, whereas Inductive reasoning moves from specific observation to a generalization.
- o In deductive reasoning, the conclusions are certain, whereas, in Inductive reasoning, the conclusions are probabilistic.
- o Deductive arguments can be valid or invalid, which means if premises are true, the conclusion must be true, whereas inductive argument can be strong or weak, which means conclusion may be false even if premises are true.

Basis for comparison	Deductive Reasoning	Inductive Reasoning
Definition	Deductive reasoning is the form of valid reasoning, to deduce new information or conclusion from known related facts and information.	Inductive reasoning arrives at a conclusion by the process of generalization using specific facts or data.
Approach	Deductive reasoning follows a top-down approach.	Inductive reasoning follows a bottom-up approach.
Starts from	Deductive reasoning starts from Premises.	Inductive reasoning starts from the Conclusion.
Validity	In deductive reasoning conclusion must be true if the premises are true.	In inductive reasoning, the truth of premises does not guarantee the truth of conclusions.

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Usage	Use of deductive reasoning is difficult, as we need facts which must be true.	Use of inductive reasoning is fast and easy, as we need evidence instead of true facts. We often use it in our daily life.
Process	Theory→ hypothesis→ patterns→confirmation.	Observations→patterns→hypothesis→Theory.
Argument	In deductive reasoning, arguments may be valid or invalid.	In inductive reasoning, arguments may be weak or strong.
Structure	Deductive reasoning reaches from general facts to specific facts.	Inductive reasoning reaches from specific facts to general facts.

b) Develop a lesson plan using combination of inductive and deductive methods.

SORTING AND CLASSIFYING

Class: 9

Subject: Science

Book: Punjab Textbook Board

Topic:

Sorting and Classifying

Content:

Scientific Observations of Items; sorting, classifying, Venn Diagram

Goals:

TLW sort and classify.

Objectives:

TLW sort items based on similarities and differences. TLW construct rules for sorting based on similarities of objects

Materials:

bags with various items such as a feather, wood, bottle cap, string, etc...; magnifying glass smart board for examples paper to record

Introduction:

Hold up a toy car, toy train, and toy airplane. Have students compare how these items are the same and different. Have them record responses on sticky notes.

Development:

Draw a Triple Venn Diagram on the board. Explain how the Venn works. Have students put the sticky notes in the appropriate place on the diagram as you explain why it belongs there. Think aloud to determine similarities and then create rules for why they were sorted the way they were sorted.

Practice:

Have students look through caboodle bags and sort items that have similarities. Have students place in the appropriate part of the Triple Venn. Have students create rules for how they sorted.

Accommodations:

Some students will receive a closed sort where they are given the rules and have to try to sort them correctly. Advanced students will have to try to sort them in more than one way.

Checking For Understanding:

Informal assessment will be given by the teacher as s/he walks around and gives feedback about the sorting rules.

Closure:

Students will think-pair-share what rules should be used to sort several items that the teacher puts up on the board.

Evaluation:

Evaluation is based on how many students could effectively sort the items and create rules for sorting. An additional way to assess is to see how many can think of more than one way to sort.

Teacher Reflections:

This is an effective lesson. The students loved manipulating the items and using the magnifying glass. High motivators that kept all engaged. Some students couldn't think of more than one way to sort so I know that they need more opportunities in lessons to look for the answers that are less obvious.

Q. 2 What is an activity? Discuss the importance of activity method. Name different types of activities you would use in English.

1. INTRODUCTION • A teaching method comprises the principles and methods used by teachers to enable student learning. For a particular teaching method to be appropriate & efficient it has to be in relation with the characteristics of the learner and type of learning it is supposed to bring about.

2. OBJECTIVE • Classroom transaction • Methods of classroom transaction • What is activity method • Historical background • Importance & Characteristics • Organisation • Different types of activities • An example

3. CLASSROOM TRANSACTION • Classroom transaction is the process of creating situations whereby students are able to interact with the material to be learned in order to construct knowledge. • Classroom transactional practice includes teacher, content, environment, assessment, mode, style etc.

4. METHODS • Activity • Group work • Pair work • Collaborative • Cooperative • Project

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5. What is an activity method ? • The activity method is a technique adopted by a teacher to emphasize his or her method of teaching through activity in which the students participate rigorously and bring about efficient learning experiences. • It is a child-centered approach. It is a method in which child is actively involved in participating mentally and physically. Learning by doing is the main focus of this method.

6. So activity method means any learning that is carried out with a purpose in a social environment, involving physical and mental action, stimulating for active action or expression.

7. Historical background • Activity based learning started sometime in 1944 around World War II . • David Horsburgh is considered as the pioneer of ABL. • He opened a school called Neel Bagh in Kolar. • School has diverse curriculum, which included music, carpentry, sewing, gardening along with school subjects. • TLMs were systematically planned with different learning activities.

8. Importance • It enhances creative aspect of experience. • It gives reality for learning. • Uses all available resources. • Provides varied experiences to the students to facilitate the acquisition of knowledge, experience, skills and values. • Builds the students self confidence and develops understanding through work in his/her group. • Develops interest, enriches vocabulary and provides stimulus for reading.

9. • Develops a healthy relationship among students and between students and teachers. • An activity is said to be the language of the child. A child who lacks in verbal expression can express his ideas through activities. • Most of the subjects can be taught through this method. • This also provides an opportunity to develop good social relationships.

10. Characteristics of an effective activity • Active involvement • Confronting misconception • Multiple representation • Iteration • Appropriate use of teaching

11. How to organize an activity • Decide instructional goal. • Understand the learners' cognitive level • Consider the nature of the subject. • Know the time available and availability of resources for achieving the instructional goals. • Design suitable activity and implement that in the class. • Provide link between previous knowledge and activity. • Guide the students during activity work and follow up it to bring required changes for better use .

12. Different types of activities • Dramatization • Quizzes • Role play • Educational games • Brainstorming • Debates etc.

13. An example Topic :Fraction Exploration • Objective To understand various fractions and their comparison. • Material Required A set of 8 circular sheets of equal size which is divided into 1,2,3,4,6,8,12and16 equal parts respectively.

Q.3 What are the steps to plan discussion? Explain advantages and disadvantages of classroom discussion.

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teaching, importance of teaching through web, what are the advantages of discussion method of teaching, types of discussion method of teaching is:

- The word ‘discuss’ has been derived from the Latin root ‘discutere’, which means to shake or strike.
- A discussion is an activity of sitting and talking about a specific subject.
- A discussion method is the means by which people share experiences, ideas and attitudes.
- The discussion method of teaching is a process in which a small group assembles to communicate with each other, using speaking listening and nonverbal processes in order to achieve instructional objectives.
- Discussion Method, also called the Socratic Method after the Ancient Greek philosopher Socrates, who would engage his students with questions and dialogue. Because the class is small, the tutor is able to determine each student’s progress, and students have ample occasion to make their difficulties known. There is a true meeting of the minds.
- A defining feature of discussion is that students have considerable activity in the construction of knowledge, understanding, or interpretation.
- Discussion require interaction between students and teachers.
- Discussion involves two-way communication between participants. In the classroom situation a teacher and students all participate in discussion.
- During discussion, the teacher spends some time listening while the students spend sometime talking.
- Meaning of Discussion Method
- Discussion method of teaching is a group activity involving the teacher and the student to define the problem and seek its solution.
- Discussion method is also described as a constructive process involving listening ,thinking ,as well as the speaking ability of the student.
- Usually, during classroom discussions, the instructor will first lecture for a certain amount of time. After the lecture ends, the instructor asks students questions requiring them to answer with concrete examples and reflect on their understanding of the topic.
- Planning for discussion
- There are essential planning elements in discussion.
- They are briefly stated: Choosing the discussion topic
- Phrasing the discussion question
- Outlining the topic
- Planning discussion strategy, the beginning phase
- Planning the discussion strategy, the middle phase
- Planning the discussion strategy , the end Phase.

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- Choosing the discussion topic Ideally the teacher should not select the topic . It is left for the group to select the topic.

Types of Discussion

Types of discussion are

- The symposium
- The panel discussion
- Informal group discussion
- Formal group discussion

Advantages of Discussion Method

The following are the merits of discussion method.

- Assimilates and integrate information
- Connects new with old knowledge
- Stimulates thinking
- Develop rational thinking
- Reveals students attitude
- Helps in evaluating problems
- Increase interest
- Develop understanding in students
- Demonstration independence
- Facilitate achievement in objectives
- Develop critics
- Develop the feelings of group work
- Promote cooperation
- Develop creativity
- Develop tolerance
- Achieves higher order objectives
- Deviation from topic
- Only few students participate
- Students become opponents
- Involves more criticism
- time consuming

Q. 4 Describe principles of cooperative learning. Enlist different cooperative learning structures.

There are five fundamental elements involved in cooperative learning. In fact, these five elements distinguish cooperative learning from other forms of group learning. These elements can be thought of as pieces in a

puzzle. When all of these elements are present in a learning situation, the result is a cooperative learning group.

The five basic elements of cooperative learning are:

- Positive interdependence
- Individual and group accountability
- Interpersonal and small group skills
- Face-to-face promotive interaction
- Group processing

Positive Interdependence

This means the group has a clear task or goal so everyone knows they sink or swim together. The efforts of each person benefit not only the individual, but also everyone else in the group. The key to positive interdependence is committing to personal success as well as the success of every member of the group.

Individual and Group Accountability

The group is accountable for achieving its goals, and each member must be accountable for contributing a fair share of the work toward the group goal. No one can "hitchhike" on the work of others. The performance of each individual must be assessed and the results given back to the group.

Interpersonal and Small Group Skills

Interpersonal and small group skills are required to function as part of a group. These are basic teamwork skills. Group members must know how to - and be motivated to - provide effective leadership, make decisions, build trust, communicate, and manage conflict.

- Completing tasks
- Communicating
- Decision making
- Managing conflict
- Appreciating group members

Face-to-Face Promotive Interaction

This means that students promote each other's success by sharing resources. They help, support, encourage, and praise each other's efforts to learn. Both academic and personal support are part of this mutual goal.

Q. 5 a) What is "Set induction"? Name different types of set induction.

Set induction is about preparation, usually for a formal lesson. When the students are set, they are ready to learn ('are you set?'). Set induction is thus about getting them ready, inducing them into the right mind-set.

Sets are used before any new activity, from introduction of a new concept to giving homework. It is important in each set both to create clarity about what is expected happen (both what you will do and what they should do), and to create motivation for this to occur, with students being fully engaged in the learning.

Set induction can be done by such as:

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- Explaining potential benefits to the learner.
- Giving clear instructions.
- Describing what is going to happen.

The STEP acronym may be used to help remember what to do:

- Start: Welcome the students, settle them down and gain attention.
- Transact: Understand their expectations and explain yours. Link with previous learning.
- Evaluate: Assess the gap between their expectations and current reality. Clarify any discrepancies for them.
- Progress: Move on to the main body of learning.

Perrott (1982) identified four purposes of set induction.

1. Focusing attention on what is to be learned by gaining the interest of students.
2. Moving from old to new materials and linking of the two.
3. Providing a structure for the lesson and setting expectations of what will happen.
4. Giving meaning to a new concept or principle, such as giving examples.

b) Explain the need and importance of teaching tools in education.

Learning is more powerful and dynamic with tools that are already right in front of you – and it's up to educators to impress this on students in the classroom. When you bring real things and authentic daily- life situations into the classroom, listening becomes discovering, interest becomes wonder, and passive learning becomes active exploration. Lessons come to life with touch, motion, and sound. Teacher resources, insights from fellow educators, and personalized support help you teach every subject, from reading to coding, in ways that kids really get. All of which makes those magical, a-ha moments happen much more often. For everyone. The most powerful tools for learning are the ones students love to use.

Teaching Tools include:

1-Teaching Aids.

They include:

(Cards, Charts, grids, Pictures, Drawing, photos, magazines, worksheets, mindmapping. Technology, Video, digital material, data show, CDs, Electronic prohrama, Dictionary, Websites, The computer, the internet, E-Book, Intelligent board, Blackboard, Realia, actual fields, Real situations, Online Dictionaries, Graffice Organizers, virtual tours of their latest exhibits, The real daily environmental things.....)

2-Teaching resources / Material :

They include:

A-The actual daily- life sites and environmental realia.

B-Concrete teaching Material.e.g.(Book, classroom supplies for teachers, Realia, CD, Vedio tape, tablet, iPad, Mac, and Apple TV ..)

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C-Theoretical teaching material. e.g.(Workshops, Training units)

3-Online Teacher's Tools / Resources:

1. Wordpress.
2. Google forms.
3. Logomaker.
4. Internet readings.
5. Kahoot.
6. The Web Resources.
7. Voice of America Learning English.
8. Grammarly.
9. TED Talks.
10. YouGlish.
11. Corpus of Contemporary American English.

4-Electronic teaching and learning programs:

(Word program, Excel program, Power-point program, Access program, MS picture management program, Movie-maker program, Free-mind program, Lingoes program, Celestia program, Yanka program, Anki program, Jing program, Hot potatoes program, MS Mathematics program, the Sage program, Chemistry crocodile program, Physics Crocodile program and a lot of other electronic programs. Electronic teaching enables the teacher to do an electronic lesson plan and give an electronic lesson presentation.)

5-Teaching methods.

They include:

(Active learning method, Projects, Inquiry-based teaching method, discovery method, Acting the scenes, Pointing, Role-playing, Elicitation, CLT Method, Internet-based teaching method, Brainstorming method, Electronic programs teaching, Classroom Network, observation, imitation, repetition, Music, Songs, Games, Storytelling, Puzzles, Riddles, Story theatre, Solving problems, Playing roles, Changing roles, pair work, Dialoguing, Group work, Co-Curriculum activities, Involvement, Engagement, Debating, Interviewing, Practical learning, analysis, Practice and research, Synthesis, Evaluation, Imagination.....)

6-Teaching Skills:

They include:

A-Language Skills (Listening-Speaking-Reading-Writing).

B-Teacher's Skills (Guiding, interviewing, Dialoguing, Observation)

C-Learner's Skills (Interactivity, Participation, Pair work, peer work, acting, elicitation, Group work, Dialoguing, Practice, Analysis, Synthesis, Evaluation, imagination, Exploration and Discovery)

7-Teaching Activities.

They include:

A-Co-curriculum activities. (Inside classroom)

B-Extra-curriculum Activities. (Inside school)

C-Extra-curriculum Activities. (Outside school)

8-Assessment and Evaluation

Assessment includes:

1-Pre-assessment:

It is a measurement of the learning received during the class as part of comparing what the student knew before in a pre-test and after the class experience in a post test.

2-During assessment:

1-It is usually done to gauge where the learner is.

2-It is helpful to pinpoint if the learner is progressing or having a misconception that needs to be cleared up .

3-It is either formative or summative.

4-It is graded or ungraded.

3-Post Assessment:

1-It is used to determine if the learner has met the learning outcomes.

2-It is either formative or summative.

3-It is graded.

Evaluation:

Evaluation is a strategy used to collect information based on evidence to modify the system of learning.

Evaluation includes repeated assessment. It is done by the teacher, senior teacher and the supervisor at the end of the term or the whole year. It includes all the classroom components, course content, learners' activities and the teacher's strategy. This information is graded. There are free awards, recognition awards and certificates to print, with matching incentives sheets.