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Registration No.:

Course Code: 623

Program: M.A./M. Ed/B. Ed

Semester: Autumn 2026

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ALLAMA IQBAL OPEN UNIVERSITY, ISLAMABAD

Course: Teaching Strategies at Elementary Level (0623)

Level: M.A./M. Ed/B. Ed

Semester: Autumn 2026

Assignment No. 1 (Units 1–5)

SOLVED ASSIGNMENT GUIDE

(For Study & Reference)

Note: This guide is prepared for study and reference purposes. Students are advised to read the relevant units of the course book and write the assignment in their own words.

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Question 1: Concept and Components of Teaching; Factors Affecting the Pre-Active and Post-Active Phases (20 Marks)

Q. 1: Explain the concept and essential components of teaching. Analyse how learner characteristics, learning environment, resources, time, and assessment affect the teaching-learning process during its pre-active and post-active phases.

Introduction

Teaching is the heart of the educational process. Although everyone has some everyday idea of teaching — a teacher standing before a class, explaining a lesson — the professional concept of teaching is far richer and more demanding than simply 'telling' or 'giving information'. Teaching is a deliberate, planned and interactive process through which a teacher helps learners to

achieve intended changes in their knowledge, skills, attitudes and behaviour. In the elementary school, where children are at the most formative stage of their development, the quality of teaching largely decides the quality of all later learning. This answer first explains the concept of teaching and its essential components, and then analyses how five important factors — learner characteristics, learning environment, resources, time and assessment — influence the teaching-learning process during its pre-active (planning) phase and its post-active (evaluation and reflection) phase.

The Concept of Teaching

Scholars have defined teaching in several complementary ways. H. C. Morrison described teaching as an intimate contact between a more mature personality and a less mature one, designed to further the education of the latter. B. O. Smith defined teaching as a system of actions intended to produce learning. N. L. Gage called it a form of interpersonal influence aimed at changing the behaviour potential of another person. Taken together, these definitions show that teaching is (i) intentional — it is done for a purpose, namely learning; (ii) interactive — it involves a living relationship between teacher, learners and content; (iii) systematic — it proceeds through planned actions rather than chance; and (iv) developmental — its success is measured by the growth of the learner, not by the performance of the teacher alone.

Teaching must also be distinguished from related terms. Instruction is narrower: it mainly concerns the transmission of knowledge and information. Training is narrower still: it develops specific skills through practice. Conditioning shapes behaviour through stimulus and reward, while indoctrination fixes beliefs without encouraging critical thought. Mature teaching

includes elements of instruction and training but goes beyond them: it develops understanding, thinking, values and independence. At the elementary level this breadth is essential, because the teacher is laying foundations of language, number, curiosity, character and social behaviour at the same time.

Essential Components of Teaching

Teaching can be analysed into a set of interdependent components. If any one of them is weak or missing, the whole process suffers.

- Teacher: The teacher is the organiser and guide of the process. Subject knowledge, pedagogical skill, understanding of children, communication ability, patience and professional commitment all belong to this component. In Philip Jackson's classic analysis, the teacher acts before, during and after classroom interaction, and each role demands different abilities.
- Learners: Learners are not passive receivers but the very centre of teaching. Their age, previous knowledge, abilities, interests, language, health and home background determine what can be taught and how. Teaching that ignores the learner becomes mere talking.
- Content (subject matter): The curriculum and the specific topics, concepts and skills selected for a lesson form the content component. Content must be accurate, properly sequenced from simple to complex, and related to the learners' experience.
- Objectives: Objectives state what learners should be able to do as a result of teaching. Clear objectives in cognitive, affective and psychomotor domains give direction to every other component and provide the standard against which achievement is judged.

- Methods, strategies and aids: These are the means by which content reaches the learners — explanation, questioning, activity, demonstration, audio-visual aids and now digital tools. The means must fit the objectives, the content and the learners.
- Learning environment: The physical setting (classroom, seating, light, ventilation) and the psychological climate (safety, encouragement, discipline, relationships) together form the environment in which teaching occurs.
- Assessment and feedback: Assessment finds out how far the objectives have been achieved, diagnoses difficulties and feeds information back to teacher and learners so that teaching can be improved.

Phases of Teaching: A Brief Frame

Jackson divided teaching into three phases. The pre-active phase is the planning stage before the teacher enters the classroom: fixing objectives, selecting and organising content, deciding strategies and materials, and preparing assessment. The inter-active phase is the actual classroom transaction. The post-active phase follows the lesson: evaluating outcomes, judging the success of the strategies used, and reflecting in order to improve future teaching. The question asks specifically about the pre-active and post-active phases, and it is in these two 'thinking' phases — before and after the visible act of teaching — that the five factors do much of their quiet but decisive work.

Learner Characteristics

In the pre-active phase, knowledge of the learners shapes every planning decision. The teacher estimates the entry behaviour of the class — what the children already know — and selects

objectives that are neither too easy (producing boredom) nor too difficult (producing frustration). For a class of seven-year-olds with weak reading skills, the teacher plans more oral work, pictures and concrete objects; for a mixed-ability class she plans tiered tasks and group work so that slow and fast learners are both engaged. Home language matters too: where children speak a regional language at home, the plan must build bridges to the language of the textbook.

In the post-active phase, learner characteristics explain the results the teacher obtains. If assessment shows that only the front-bench, high-ability pupils achieved the objectives, the reflection is that the plan suited one type of learner only. Differences in performance lead the teacher to diagnose individual difficulties — a child who failed the numeracy test may have a visual problem, or may simply have been absent during the foundational lesson — and to plan remedial teaching accordingly. Thus learner characteristics turn post-active evaluation from a mere record of marks into a diagnosis of individual needs.

Learning Environment

In planning, the teacher anticipates the environment she will actually face: a class of fifty-five children in a small room requires different strategies from a class of twenty-five with open space. She plans seating arrangements, group sizes, routines for distributing materials, and ways of creating a warm, orderly climate — displays of children's work, a reading corner, clear classroom rules agreed with the pupils. She also plans for the social environment: pairing shy children with supportive partners, and preventing domination by a few vocal pupils.

After the lesson, the environment is a prime object of reflection. Was noise from the adjoining classroom or the road a real obstacle? Did the seating arrangement prevent some children from seeing the demonstration? Did the emotional climate — for instance, fear of making mistakes — stop children from answering questions? Post-active analysis often reveals that a lesson failed not because the content or the method was wrong, but because the environment worked against it; the next plan then begins with rearranging the environment rather than blaming the learners.

Resources

Resources — textbooks, charts, models, flashcards, laboratory or activity materials, and technology — must be selected and prepared in the pre-active phase. The teacher checks availability in advance, prepares low-cost or no-cost alternatives where the school lacks materials, and sequences their use within the lesson. Planning also includes the human resources around the school: a gardener who can talk about plants, or parents who can contribute local knowledge.

In the post-active phase, the teacher evaluates whether the resources actually worked. Did the chart prove too small to be read from the back? Did the smart board fail for want of electricity, and was the fallback plan adequate? Did the concrete materials genuinely help children understand place value, or did they become toys that distracted attention? Such judgements build the teacher's practical wisdom: she records which aids earned their place, which need modification, and what must be arranged earlier next time. Resource failures identified post-actively lead directly to better pre-active preparation in the next cycle.

Time

Time is the most strictly limited resource in teaching. In the pre-active phase the teacher allocates the period among introduction, presentation, practice and conclusion, estimates how long each activity will take with young children, and plans the pacing of the whole unit across days and weeks so that the syllabus is covered without rushing the foundational ideas. She also plans for interruptions and keeps some activities flexible — a short filler task if an activity finishes early, an extension task for fast finishers.

In the post-active phase, time is judged retrospectively. The teacher asks: did the lesson overrun because the introduction was too long? Were the last ten minutes — often the practice or summary stage — squeezed out, leaving learning incomplete? Chronic time problems, visible across several lessons, point to unrealistic planning assumptions about children's speed of work. The reflective teacher then adjusts: fewer objectives per lesson, tighter activity design, or pre-distributed materials. Time analysis in the post-active phase is therefore one of the most practical forms of professional learning.

Assessment

Assessment belongs to planning as much as to testing. In the pre-active phase, the principle of constructive alignment requires the teacher to decide in advance how achievement of each objective will be checked: oral questions during the lesson, a short written exercise, observation of group work, or an end-of-unit test. Planning assessment beforehand also disciplines the objectives themselves — an objective that cannot be observed or measured in any way is rewritten until it can be.

The post-active phase is where assessment results are actually interpreted. The teacher analyses pupils' answers item by item: a question missed by most of the class usually signals a teaching gap rather than a learning gap, and the content must be re-taught differently. Assessment also evaluates the teaching strategies themselves — comparing results with the objectives tells the teacher whether her methods were effective. Finally, assessment feeds forward: grades and comments inform learners and parents, records inform the teacher's next pre-active phase, and the cycle of teaching begins again at a higher level of understanding.

Conclusion

To conclude, teaching is a purposeful, interactive and systematic process whose essential components — teacher, learners, content, objectives, methods and aids, environment and assessment — work as a single system. The pre-active phase converts knowledge of learners, environment, resources and time into a workable plan, with assessment designed in advance; the post-active phase converts the evidence of assessment, and reflection on learners, environment, resources and time, into professional learning. The teacher who plans thoughtfully and reflects honestly joins the two phases into a continuous cycle of improvement, and it is this cycle, more than any single classroom performance, that makes teaching a profession.

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Question 2: Glaser's Basic Teaching Model, Concept Attainment Model and Group Investigation Model — A Comparison (20 Marks)

Q. 2: Compare Glaser's Basic Teaching Model, the Concept Attainment Model, and the Group Investigation Model. Select an elementary-level topic and justify which model would best support the intended learning outcomes.

Introduction

A model of teaching is much more than a method. As Joyce and Weil explain, a model is a pattern or plan that shapes curriculum, guides instruction and specifies the learning environment; it describes the types of learning and outcomes that will result when its elements are used together. Models differ in their goals, their theory of learning, the roles they assign to teacher and learners, and the classroom conditions they require. This answer compares three well-known models — Robert Glaser's Basic Teaching Model, the Concept Attainment Model associated with Jerome Bruner, and the Group Investigation Model developed by Herbert Thelen and elaborated by Shlomo Sharan — and then applies the comparison to an elementary topic in order to justify a choice.

Glaser's Basic Teaching Model

Glaser (1962) proposed his model as a general framework describing the whole teaching process in four basic components. (1) Instructional objectives are stated in behavioural terms — what the learner will be able to do after instruction. (2) Entering behaviour describes the learner's prior knowledge, abilities and readiness before instruction begins. (3) Instructional

procedures are the methods, strategies and media the teacher uses to bring about the desired change. (4) Performance assessment measures how far the objectives have been achieved. The most distinctive feature is the feedback loop: assessment results flow back to each of the other three components, so objectives can be revised, entering behaviour re-judged and procedures improved. The model rests on no single school of psychology; it is an organisational framework for rational, self-correcting teaching. The teacher is the central planner and decision-maker, and the model suits any subject and any level, including elementary classes, because it simply disciplines the teacher to align objectives, learners, methods and testing.

The Concept Attainment Model

The Concept Attainment Model, derived from Bruner's work on thinking and developed for classrooms by Joyce and Weil, aims at teaching concepts and developing inductive reasoning. A concept has a name, essential attributes, attribute values, examples and non-examples, and a rule or definition. Teaching proceeds in three phases. In Phase One the teacher presents labelled examples — 'yes' examples that contain the concept's attributes and 'no' examples that do not — and pupils compare attributes and form hypotheses about the concept. In Phase Two pupils test their attainment: they identify additional unlabelled examples, sort new cases, and generate examples of their own. In Phase Three pupils analyse their thinking strategies — how their hypotheses changed, what evidence misled them, and how they could think more effectively. The teacher controls the sequence and the data but keeps the concept's name hidden during discovery; learners are active hypothesis-makers. The model is powerful for

concept-rich subjects (science, mathematics, language) and simultaneously teaches content and the process of thinking itself.

The Group Investigation Model

The Group Investigation Model grows out of John Dewey's democratic, inquiry-oriented view of education, formalised by Thelen and developed by Sharan and Sharan. Pupils work in small democratic groups to investigate a genuine problem or topic through six stages: (1) the class identifies a general topic and organises itself into interest groups around sub-topics; (2) each group plans its investigation — what to study, how, and who does what; (3) the group carries out the investigation, gathering information from several sources; (4) the group prepares a report or presentation; (5) groups present their findings to the whole class; and (6) teacher and pupils together evaluate the products and the process. The teacher acts as counsellor, facilitator and resource person rather than lecturer. The model targets academic inquiry, social skills, democratic values and intrinsic motivation; it demands several periods, access to varied sources, and learners mature enough to plan and cooperate — though simplified versions work with younger children on concrete topics.

Comparison of the Three Models

Table 1: Comparing the three models of teaching

Aspect	Glaser's Basic Teaching Model	Concept Attainment Model	Group Investigation Model
Main purpose	Organising the whole teaching process around objectives	Teaching concepts and inductive thinking	Inquiry, cooperation and democratic learning
Source / theorist	Robert Glaser (1962)	Jerome Bruner; Joyce &	Herbert Thelen; Sharan

		Weil	& Sharan (from Dewey)
Core structure	Objectives → entering behaviour → procedures → assessment, with feedback loops	Three phases: data presentation & hypothesising; testing attainment; analysing thinking	Six stages from topic selection to group presentation and evaluation
Teacher role	Central planner and manager of instruction	Presenter of data, controller of sequence, guide of reasoning	Facilitator, counsellor and resource person
Learner role	Learner whose entering behaviour and performance are assessed	Active hypothesis-maker and concept discoverer	Co-planner, investigator and presenter in a group
Assessment	Performance assessment built in; results feed back to all components	Pupils sort and generate examples; discussion of thinking strategies	Joint teacher–pupil evaluation of products and group process
Best suited to	Any subject; planning effective, accountable instruction	Concept teaching in science, maths, language	Projects, social studies, science inquiries over several days
Main limitation	A framework, not a classroom procedure in itself	Requires carefully chosen examples; weak for skills and attitudes alone	Time-consuming; needs resources and cooperative maturity

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The comparison shows three different levels of generality. Glaser's model is a meta-model: it tells the teacher how to organise any teaching episode but not exactly what to do minute by minute. The Concept Attainment Model is a specific instructional design for a specific intellectual purpose — concept learning through guided discovery. Group Investigation is a social model of learning: its deepest goals are cooperation, inquiry skills and democratic participation, and content learning rides on those processes. They also differ in control: Glaser keeps control with the teacher's plan, Concept Attainment shares control (teacher controls data, pupils control hypotheses), and Group Investigation transfers most control to learners.

Finally they differ in time and conditions: a concept attainment lesson fits one period; group investigation needs days and materials; Glaser's cycle frames both.

Application: Selecting a Model for an Elementary Topic

Consider the Class 5 science topic 'Living and non-living things and their characteristics' — or, to make the intended outcomes precise, the related concept lesson on 'vertebrates and invertebrates'. The intended learning outcomes are: (i) pupils will state the defining attributes of vertebrates (possession of a backbone) and invertebrates; (ii) pupils will correctly classify at least ten familiar animals, including tricky cases such as the bat, the whale, the snake and the earthworm; (iii) pupils will justify each classification by referring to attributes; and (iv) pupils will show curiosity and care towards living creatures.

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For these outcomes, the Concept Attainment Model is the best choice, and the justification is straightforward. The heart of the topic is a pair of concepts defined by critical attributes — exactly what the model is designed to teach. Presenting labelled examples and non-examples (dog–yes, spider–no, fish–yes, snail–no) forces pupils to attend to the backbone attribute instead of memorising lists, and tricky cases in Phase Two expose and correct the common misconceptions that size, legs or habitat decide the category. The model's third phase, analysing thinking strategies, directly serves outcome (iii): pupils learn to justify classification by attributes, a transferable scientific skill. The lesson also fits a single period, needs only picture cards, and suits the cognitive level of ten-year-olds when examples are concrete and familiar.

Glaser's model is not rejected; it operates at a different level. The teacher would still use Glaser's cycle to plan the lesson — stating the outcomes above, checking entering behaviour

(pupils already know common animals), selecting the concept attainment procedure, and assessing performance through an exit sorting task, with the results feeding the next lesson. Group Investigation, by contrast, would be an inefficient main design here: the concepts are well-defined and quickly taught, and sending groups to 'investigate' them for days would consume time better spent on outcomes the model serves well elsewhere — for example, a later project in which groups investigate the animals of different local habitats and present their findings. The wise teacher therefore uses Glaser as the planning frame, Concept Attainment as the engine of this particular lesson, and reserves Group Investigation for the extended project that follows.

Conclusion

In conclusion, the three models are not rivals but tools of different kinds. Glaser's Basic Teaching Model supplies the logic of all good teaching — objectives, entering behaviour, procedures and assessment joined by feedback. The Concept Attainment Model supplies a precise technology for teaching concepts and inductive thinking. The Group Investigation Model supplies a democratic, inquiry-based organisation for extended learning. Model selection should always follow the intended outcomes: where the outcome is accurate concept formation with justified classification, as in the elementary science topic chosen here, the Concept Attainment Model, framed within Glaser's cycle, best supports the learning the teacher intends.

Question 3: Teaching Strategy versus Teaching Method; Autocratic and Permissive Styles and Their Adaptation (20 Marks)

Q. 3: Differentiate a teaching strategy from a teaching method. Critically compare autocratic and permissive teaching styles, and explain how an elementary teacher should adapt teaching style and strategy to learners, content, objectives, and classroom conditions.

Introduction

Teachers use the words strategy, method and style almost interchangeably in staffroom talk, yet in the theory of teaching they mark different levels of decision-making, and confusing them leads to confused planning. A strategy is the teacher's broad plan of action; a method is a standardised procedure for presenting content; a style is the personal, characteristic manner in which a teacher relates to learners and controls the class. This answer first separates strategy from method, then critically compares the autocratic and permissive teaching styles, and finally explains how an elementary teacher adapts both style and strategy to learners, content, objectives and classroom conditions.

Teaching Strategy and Teaching Method: The Difference

A teaching strategy is a generalised plan of action, devised in advance, for achieving specified teaching objectives in a given situation. It is goal-directed and flexible: it includes the selection and combination of methods, techniques, aids and forms of classroom organisation, and it changes when the situation changes. Strategies are often described by their orientation — teacher-centred or learner-centred, verbal or activity-based, inductive or deductive. Because a

strategy is a plan, it belongs mainly to the pre-active phase of teaching and is evaluated by one test only: did it achieve the objectives with these learners?

A teaching method, by contrast, is an orderly, standardised procedure for presenting subject matter — a recognisable pattern of steps that different teachers can follow in much the same way. The lecture method, discussion method, demonstration method, project method and problem-solving method are methods in this sense. each has its own procedure, its own pattern of teacher and learner activity, and its own typical strengths and weaknesses. A method is concerned mainly with the presentation of content, whereas a strategy is concerned with the whole design of the learning episode

Table 1. Teaching strategy versus teaching method

Point of difference	Teaching strategy	Teaching method
Nature	A broad, flexible plan of action for achieving objectives	A standardised, step-wise procedure for presenting content
Scope	Wide: covers methods, techniques, aids, grouping and evaluation	Narrow: covers the manner of presentation itself
Focus	Achievement of objectives in a particular situation	Orderly delivery of subject matter
Flexibility	Highly flexible; redesigned for each class and topic	Relatively fixed; the same steps recur across classes
Level of decision	Chosen before teaching, at the planning level	Operates during teaching, at the execution level
Examples	Learner-centred discovery strategy; mastery learning strategy	Lecture, discussion, demonstration, project methods

The relationship is one of part and whole: methods are the building blocks out of which strategies are assembled. A teacher following an inductive, learner-centred strategy for a

science lesson might combine observation, questioning and discussion methods within it; the same discussion method could serve a quite different, teacher-centred strategy in a revision lesson. Understanding this hierarchy frees the teacher from the false question 'which single method is best?' and replaces it with the professional question 'which combination, arranged how, will achieve my objectives here?'

Teaching Styles: Autocratic and Permissive

A teaching style is the teacher's characteristic pattern of behaviour — especially the pattern of control, communication and relationship with learners. Two contrasting poles are commonly described. The autocratic (authoritarian, teacher-dominated) style concentrates all decisions in the teacher: the teacher selects content, sets tasks, asks the questions, supplies the answers, enforces discipline through authority, and evaluates by reward and punishment. Communication is largely one-way, and learners' initiative is minimal. The permissive (laissez-faire, learner-dominated) style swings to the opposite pole: learners choose activities, pace and even goals; the teacher offers materials and support but exercises little direction, sets few demands, and avoids judgement or correction.

Each style has genuine strengths, which is why a critical comparison — not a caricature — is needed. The autocratic style produces order, pace and coverage: in a large elementary class with limited time it ensures that essential content is presented, routines are established, and safety is maintained; young children, who need structure and clear boundaries, often feel secure under a firm, predictable teacher. Its weaknesses, however, are serious. One-way teaching suppresses questioning and creativity, makes learning dependent on the teacher's

presence, can generate fear and resentment, and wastes the diagnostic information that only active learners reveal. Pupils may comply without understanding.

The permissive style respects children's autonomy and can produce enthusiasm, creativity and honest communication; children in a permissive classroom are rarely afraid. But its weaknesses are equally serious, especially at the elementary stage: without direction, activity drifts, misconceptions go uncorrected, confident children dominate while shy or weak learners quietly fall behind, and the curriculum's essential objectives may simply never be reached. Freedom without guidance is not respect for the child; it is abdication by the adult. Research and classroom experience therefore converge on the democratic (participative) style as the balanced position — the teacher leads and structures, but learners share in decisions, discussion and evaluation — with the skilful teacher deliberately moving toward the autocratic pole for moments that need firmness (safety instructions, examinations, settling a new class) and toward the permissive pole for moments that need open exploration (free play, creative work, brainstorming).

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Adapting Style and Strategy: To the Learners

Learners are the first consideration. Age and development set the frame: six-year-olds need short activities, concrete materials, movement and warm, firm guidance — a fairly directive style with activity-based strategies; by Class 5, pupils can sustain discussion, group investigation and self-evaluation, allowing a more democratic style and inquiry strategies. Ability differences require differentiated strategies: tiered worksheets, peer tutoring and flexible grouping. Interests and motivation matter — a story-loving class meets new content through narrative

strategy. Language background, special educational needs and cultural context all modify the plan: a child learning in a second language needs more visual support and wait-time, whatever the strategy. The rule is simple: style and strategy must fit the children actually in the room, not an imaginary average class.

Adapting to Content and Objectives

Content has its own logic. Factual and conceptual content (names, definitions, classifications) suits exposition, questioning and concept attainment; skills (reading fluency, handwriting, computation) require demonstration, guided practice and feedback; attitudes and values grow through stories, discussion, role play and the teacher's example rather than through telling. Objectives decide more precisely still. If the objective is recall of multiplication tables, drill within a lively game strategy is legitimate; if the objective is to design a fair test in science, only an inquiry strategy will do, and the teacher's style must tolerate uncertainty and pupil decision-making. Bloom's taxonomy is the teacher's map here: the higher the intended level of thinking, the more active the strategy and the more democratic the style must be.

Adapting to Classroom Conditions

Finally, real conditions discipline ideal plans. Class size changes what is possible: discussion in groups of six works with sixty pupils where whole-class discussion collapses into a dialogue with the front row. Available resources decide whether a technology-supported or a chalk-and-talk strategy is realistic; a teacher without electricity plans brilliant low-cost aids instead of apologising for absent videos. Time of day matters — young children are freshest for demanding new learning in the early periods and better suited to activity and art later. Physical

space, noise, weather, and even the examination calendar all legitimately reshape strategy. The professional teacher reads the conditions, adapts without abandoning the objectives, and keeps a fallback plan: adaptation is not weakness but the essence of teaching expertise.

Conclusion

To conclude, a method is a standard procedure for presenting content, while a strategy is the teacher's flexible, objective-driven plan that selects and combines methods, aids and organisation for a particular class. Styles range from autocratic control to permissive freedom; each pole has limited uses and real dangers, and the democratic style — firm in structure, open in participation — is the sound professional centre from which the teacher moves deliberately as the situation requires. Style and strategy are therefore never chosen once for all: they are fitted, lesson by lesson, to the learners, the content, the objectives and the conditions, and it is this continuous, reflective fitting that distinguishes the professional teacher from the mere presenter of a textbook.

Question 4: Lecture, Discussion, Demonstration and Experimental Methods Compared; An Integrated Instructional Sequence (20 Marks)

Q. 4: Compare lecture, discussion, demonstration, and experimental methods in terms of purpose, procedure, teacher and learner roles, strengths, and limitations. Design a short instructional sequence that uses at least three of these methods coherently for an elementary class.

Introduction

No single method can serve every teaching purpose, because learning itself is of many kinds: receiving organised knowledge, thinking aloud with others, watching a skilled performance, and finding out by doing are different acts that call for different procedures. Four classical methods illustrate this variety well — the lecture, discussion, demonstration and experimental methods. This answer compares them under five heads (purpose, procedure, the roles of teacher and learner, strengths and limitations) and then designs a short instructional sequence for an elementary class in which three of them are combined coherently, each doing the work it does best.

The Lecture Method

The lecture method's purpose is the efficient presentation of organised subject matter: introducing a topic, explaining difficult ideas, summarising and connecting facts, and covering content quickly for a large group. Its procedure is simple — preparation of a structured talk, presentation with voice variation, examples, blackboard summaries and occasional questions, and a concluding recap. The teacher is the active expert and communicator; learners mainly listen, note and occasionally respond, so their role is comparatively passive. Its strengths are economy (much content, many pupils, little equipment), coherence of presentation, and suitability for giving an overview or a shared foundation. Its limitations at the elementary level are well known: young children's attention span is short, listening is the weakest channel for most of them, individual differences are ignored, there is little feedback on understanding, and retention from listening alone is poor. Pure lecturing is therefore the least suitable main

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method for young children, though a short, lively 'mini-lecture' or talk remains useful within a mixed design.

The Discussion Method

Discussion aims at understanding through exchange: clarifying ideas, examining viewpoints, solving problems jointly and developing speaking, listening and reasoning. Its procedure involves presenting a question or problem, pupils expressing views (in the whole class or in small groups or pairs), the teacher guiding, probing and summarising, and the class reaching a conclusion. The teacher becomes a chairperson and facilitator who asks good questions, ensures participation and keeps the talk purposeful; learners become speakers, listeners and thinkers — genuinely active. Strengths include high participation, development of communication and thinking skills, exposure of misconceptions, and democratic habits. Limitations: it is time-consuming, can drift off the topic, may be dominated by a few confident pupils while others stay silent, requires a class trained in discussion habits, and is a poor vehicle for delivering large amounts of new factual content.

The Demonstration Method

Demonstration shows rather than tells: its purpose is to present a skill, a process or a phenomenon so that learners can observe it accurately before attempting it themselves — how to use a balance, how a seed germinates in time-lapse, how to form letters, how to carry out a science test safely. The procedure runs: preparation and rehearsal of materials; introduction linking to prior knowledge; the demonstration itself, performed slowly with running commentary and questions; pupils' observation and, where possible, repetition; and summary.

The teacher is the expert performer and narrator; learners are observers who question and then imitate. Strengths are clarity (seeing removes verbal confusion), economy of materials (one set serves the class), safety, and strong retention because sight supports words. Limitations: learners can remain passive spectators, those at the back may see little, a failed demonstration can confuse, and observation alone does not build the skill — practice must follow.

The Experimental Method

The experimental method puts the learner in the position of an investigator: its purpose is learning by direct experience — forming hypotheses, manipulating materials, observing results and drawing conclusions, as in testing which material absorbs water best or whether plants need light. The procedure follows the logic of inquiry: a problem is posed; pupils suggest what they expect; the test is set up and carried out, often in groups; observations are recorded; results are compared and conclusions drawn. The teacher designs the task, provides and manages materials, ensures safety and helps pupils interpret results; learners are active investigators who handle, measure and reason. Strengths are deep, durable learning, genuine understanding of cause and effect, development of scientific attitudes and high motivation. Limitations are heavy: it consumes time and materials, demands careful classroom management, carries safety responsibilities, and without guidance children may 'play' without noticing the learning point.

Table 1: The four methods at a glance

Aspect	Lecture	Discussion	Demonstration	Experimental

Main purpose	Present organised content efficiently	Clarify and build understanding through talk	Show a skill/process accurately	Discover through hands-on inquiry
Teacher role	Expert presenter	Facilitator and chairperson	Performer and narrator	Designer, guide and safety manager
Learner role	Listener	Speaker and reasoner	Observer, then imitator	Investigator
Key strength	Economy and coherence	Participation and thinking	Clarity through seeing	Deep, durable understanding
Key limitation	Passivity; weak for young children	Time; domination by a few	Spectator risk; visibility	Time, materials, management

An Integrated Instructional Sequence

Topic: 'Materials around us — which materials absorb water?' Class 4 Science, one double period (about 70 minutes). Objectives: pupils will (i) predict and test the absorbency of common materials; (ii) record results in a simple table; (iii) conclude which materials are suitable for a mop or a raincoat, giving reasons. The sequence uses demonstration, experiment and discussion, opening with a two-minute teacher talk that borrows the lecture's framing strength without its passivity.

Step 1 — Focused introduction (5 minutes, brief talk). The teacher shows a wet floor and a mop and asks: 'Why is the mop made of cotton cloth and not of plastic sheet?' Pupils offer guesses. The teacher states the day's question and the meaning of 'absorb'. Step 2 — Demonstration (10 minutes). The teacher demonstrates the fair test on one material: equal-sized pieces, the same amount of water dropped from a dropper, the same waiting time, observing and recording drops absorbed. She thinks aloud so pupils see both the procedure and the standard of fairness. Step 3 — Group experiment (30 minutes). Groups of five test sponge, cotton cloth, plastic

sheet, newspaper and towel fabric, predicting first, then testing, and recording results in a table on their worksheets; roles (dropper, timer, recorder, materials manager, reporter) are assigned and rotated. The teacher circulates, questions and ensures safety and fairness. Step 4 — Discussion (15 minutes). Reporters share results; the class compares tables, resolves disagreements (one group re-tests a disputed material) and discusses the concluding applications: mop, towel, raincoat, umbrella. Step 5 — Conclusion and assessment (10 minutes). Pupils complete an exit slip: 'One material that absorbs well is ___ because ___. A raincoat should be made of ___ because ___.' The teacher summarises the concept and previews the next lesson.

The coherence of the sequence lies in the division of labour among methods: demonstration guarantees that every child understands the procedure before touching materials (preventing the chaos of unguided experiment); experiment converts the demonstrated procedure into first-hand evidence; discussion converts group evidence into shared, reasoned conclusions; and the brief talk frames the whole. Remove any one and the chain breaks: without demonstration the tests would be unfair, without experiment the conclusions would be hearsay, without discussion the results would stay private and uncorrected.

Conclusion

In conclusion, lecture, discussion, demonstration and experimental methods differ fundamentally in purpose, procedure and the balance of activity between teacher and learner, and each is strong exactly where another is weak. The professional skill is not loyalty to one method but orchestration: selecting methods whose strengths match each stage of the learning

task and sequencing them so that the output of one becomes the input of the next, as the absorbency sequence shows. For elementary children especially, methods that let them see, do and talk must carry the main weight, with telling kept short and purposeful.

Question 5: Project, Activity-Based, Questioning and Problem-Solving Methods; A 5Es Inquiry Activity (20 Marks)

Q. 5: Evaluate project, activity-based, questioning, and problem-solving methods for elementary teaching. Choose a curriculum topic and develop an inquiry or investigation activity based on the 5Es instructional model, specifying the conditions required for successful implementation.

Introduction

Modern elementary education has moved steadily away from the idea that children learn mainly by listening, towards the conviction — supported by Dewey, Piaget and contemporary research — that young children learn best by doing, asking, investigating and making. Four methods embody this conviction in different ways: the project method, activity-based learning, the questioning method and the problem-solving method. This answer evaluates each of them — its meaning, value and difficulties — and then develops a complete inquiry activity on a chosen curriculum topic using the 5Es instructional model (Engage, Explore, Explain, Elaborate, Evaluate), together with the conditions that make such teaching succeed.

The Project Method

The project method, given classical form by W. H. Kilpatrick from Dewey's philosophy, organises learning around a purposeful, whole-hearted activity carried out in a natural setting — building

a model village, running a class post office, preparing a school garden or producing a class magazine. Its steps are creating the situation, choosing and planning the project, executing it, evaluating the result and recording the work. Its strengths are considerable: learning is integrated across subjects as real life demands, motivation is intrinsic because the goal is the children's own, cooperation and practical skills grow, and knowledge is applied rather than merely stored. Its limitations must be faced honestly: projects consume much time, can leave systematic gaps in subject knowledge if used as the only method, demand resources and teacher planning of a high order, and tempt teachers to let the attractive product (the model, the chart) displace the learning it was meant to carry. Evaluation: an excellent periodic method — perhaps one substantial project per term — rather than a daily diet.

Activity-Based Learning

Activity-based learning (ABL) is less a single method than a principle: children learn through structured activities — games, manipulatives, work cards, experiments, role play — rather than through prolonged listening. In well-developed ABL systems, learning materials are graded into steps, children progress at their own pace, work individually and in small groups, and the teacher facilitates and monitors rather than lectures. Its strengths fit the elementary child perfectly: it respects developmental needs for movement and concrete experience, allows self-pacing in mixed-ability classes, builds independence, and makes classrooms joyful — a major reason it has been adopted widely for early grades. Its limitations: it requires rich, well-organised materials and careful record-keeping; poorly designed 'activities' become busywork or play without learning; classroom management and noise need skill; and teachers need

training to connect each activity to its objective and to check learning, not just completion. Evaluation: the soundest default approach for the early elementary years, provided activities are purposeful and assessment is built in.

The Questioning Method

Questioning is the oldest teaching technique — Socrates built a philosophy on it — and remains the teacher's most versatile instrument. Questions diagnose prior knowledge, focus attention, provoke thinking, check understanding and invite participation. Good practice distinguishes lower-order questions (recall, comprehension) from higher-order ones (application, analysis, evaluation, creation in Bloom's terms); uses probing follow-ups ('Why do you think so?'); distributes questions across the whole class rather than a few volunteers; allows wait-time so children can think; and increasingly teaches children to ask questions themselves, which is where inquiry begins. Strengths: it costs nothing, fits any subject and moment, gives instant feedback on learning, and keeps minds active even within other methods. Limitations: questioning can degenerate into rapid-fire recall ('guess what is in the teacher's head'), can embarrass weak pupils if used punitively, and by itself delivers no new experience — talk about things cannot replace contact with things. Evaluation: an indispensable supporting method within every lesson, but rarely a sufficient method on its own.

The Problem-Solving Method

The problem-solving method presents learners with a genuine problem — practical or intellectual — and guides them through defining it, suggesting hypotheses, gathering and testing evidence, and reaching and checking a conclusion. It is the classroom form of the

scientific method and of reflective thinking as Dewey described it. Strengths: it develops reasoning, independence and transfer — children learn not only answers but how answers are earned; it integrates knowledge from several subjects; and success builds confidence and a scientific attitude. Limitations: it is slow, unsuitable for content that is purely conventional (spellings, symbols, safety rules must simply be taught), frustrating if problems are pitched above children's reach, and demanding of the teacher's own thinking skills and classroom organisation. Evaluation: the highest-value method for developing thinking in the upper elementary years, used selectively for suitable topics and with scaffolding for younger or weaker pupils.

A 5Es Inquiry Activity: Do Plants Need Light to Grow?

Chosen topic: Class 4 Science — 'Growth of plants: what does a seedling need?' The 5Es model, developed by the Biological Sciences Curriculum Study (Bybee), sequences inquiry so that experience precedes explanation. The activity runs over about two weeks of short daily observation, with three main teaching sessions.

- Engage (Session 1, 15 minutes): The teacher shows two bean seedlings — one tall, green and healthy from the windowsill, one pale and spindly grown in a dark cupboard — and asks: 'Both got water. Why do they look so different?' Pupils share ideas; the class question is framed: 'Do plants need light to grow well?' Prior ideas are recorded on a chart without correction.
- Explore (Sessions 1–2 and daily 5-minute observations): In groups, pupils plant bean seeds in identical pots with the same soil and water; one pot goes on the windowsill, one in a dark

cupboard, one under a box with a hole cut on one side. Pupils predict outcomes, then measure height and note colour and leaf size every two days in an observation diary, drawing what they see. The teacher supplies materials, asks focusing questions, and does not yet explain.

- Explain (Session 2, end of week 1–2): Groups report patterns from their diaries; the teacher introduces the terms photosynthesis and chlorophyll in response to pupils' own descriptions ('the dark plant could not make its food'), connects the bent growth of the holed-box plant to growth towards light, and the class revisits the Engage chart, correcting earlier ideas in a different colour.
- Elaborate (Session 3): Pupils apply the concept to new cases: why do indoor plants lean towards windows? Why do gardeners space crops? Each group designs a mini-plan for keeping a classroom plant healthy, or investigates a new question of its own (e.g., 'Do seeds need light to germinate?' — which surprises them, since seeds germinate in dark soil).
- Evaluate (throughout and Session 3): Formative evaluation is continuous — observation diaries, teacher questioning, group reports. Summative checks include a labelled drawing with explanation ('Draw the three plants and explain the differences'), an exit question transferring the idea ('A plant is kept in a dark room but watered daily for a month. What will happen and why?'), and self-assessment in which pupils state one idea they changed and the evidence that changed it.

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Conditions for Successful Implementation

Inquiry teaching fails more often from missing conditions than from a faulty model. The essential conditions are: (1) Time and timetable flexibility — growing plants and genuine investigation cannot be compressed into a single rushed period; short daily slots plus longer sessions must be planned. (2) Materials ready in advance — seeds, pots, soil, measuring tools and safe workspaces prepared before the lesson, with low-cost local substitutes where budgets are thin. (3) Classroom organisation — stable groups with assigned, rotating roles; agreed rules for handling materials and moving around; routines for observation that take five minutes, not twenty. (4) Teacher skill and stance — the teacher must tolerate unanswered questions, resist explaining too early, ask probing rather than leading questions, and know the science well enough to guide without misleading. (5) A safe psychological climate — pupils must be free to predict wrongly without ridicule, since prediction and revision are the engine of the model. (6) Curriculum and assessment alignment — the inquiry must target mandated outcomes, and its assessment must credit reasoning and evidence, not only correct final statements. (7) Manageable class conditions — where classes are very large, demonstrations and pair-work adaptations preserve the inquiry spirit. Where these conditions are deliberately built, the 5Es sequence converts a simple fact — plants need light — into an experience of how knowledge is made.

Conclusion

In conclusion, the project, activity-based, questioning and problem-solving methods share a learner-active philosophy but differ in scale and function: projects integrate learning around

real purposes, activity-based learning supplies the daily texture of the young child's classroom, questioning animates and diagnoses within every method, and problem-solving trains the mind at its highest reach. The 5Es activity on plant growth shows these strengths combined in a disciplined sequence — curiosity engaged, evidence explored, concepts explained, understanding elaborated and learning evaluated — and its stated conditions remind us that inquiry is not the absence of structure but a different, carefully prepared kind of structure.

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