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Name:

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ALLAMA IQBAL OPEN UNIVERSITY, ISLAMABAD

Course: Elementary Education (826) • Level: M.A/M.Ed

Semester: Autumn 2026

Assignment No. 2 (Units 5–9)

Total Marks: 100 • Pass Marks: 40

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, understand the concepts, and then write the assignment in their own words.

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Question 1: Instructional Technology; Projected and Non-Projected Teaching Aids (20 Marks)

Explain the concept and functions of instructional technology. Critically discuss how projected and non-projected teaching aids can be selected and used effectively at the elementary level. (20)

Introduction

Every teacher faces the same difficulty: much of what must be taught is invisible, distant, past, too small, too large or too dangerous for children to experience directly. No class can visit the inside of a volcano, watch the moon change for a month in one lesson, or hold a whale. Instructional technology exists to solve this problem — to bring experience, in mediated form, into the classroom, and more broadly to apply systematic knowledge about learning to the design of teaching. At the elementary level its importance is greatest of all, because young children think concretely: they understand what they can see, touch and do far better than what they only hear described. This answer explains the concept and functions of instructional technology and then critically discusses the two great families of teaching aids — projected and

non-projected — including the principles by which a teacher should select and use them effectively in real, often poorly resourced, elementary classrooms.

Concept of Instructional Technology

Instructional technology (also called educational technology in its teaching aspect) has three related meanings. In its first and oldest sense it means technology in education: the hardware and materials used in teaching — projectors, radio, television, computers, charts, models and other aids. In its second and richer sense it means technology of education: the systematic process of designing instruction — analysing objectives, selecting media and methods, organising experiences and evaluating results — drawing on psychology and communication science. In its third sense it includes the organisation of the whole teaching-learning system: programmed learning, self-instructional materials, distance teaching (on which Allama Iqbal Open University itself rests) and, today, digital platforms, educational applications and artificial-intelligence tools. The complete concept unites all three: instructional technology is the systematic application of scientific knowledge, media and materials to make teaching and learning more effective, efficient and engaging. Two clarifications protect the concept from common errors. Technology does not mean only electronic devices — a well-made chart or a real object is as much instructional technology as a projector — and technology never replaces the teacher: it extends the teacher's reach, but objectives, judgement and human relationship remain the teacher's own.

Functions of Instructional Technology

- Making the abstract concrete: pictures, models, animations and demonstrations give young children the sensory experience on which concepts are built (Edgar Dale's 'Cone of Experience' arranges media from direct, purposeful experience at the base to abstract verbal symbols at the top, advising that young learners need experiences near the base).
- Extending experience in time and space: films, images and recordings bring the past, distant places, natural processes too slow or fast to watch, and objects too big, small or dangerous, safely into the classroom.
- Arousing and holding attention and motivation: novelty, colour, movement and sound awaken curiosity and maintain interest far better than uninterrupted talk, especially for young children whose attention span is short.
- Providing common, accurate experience: every child sees the same clear demonstration or image, reducing the misunderstandings that arise when thirty children imagine thirty different things from one verbal description.
- Individualising learning: audio, self-instructional and digital materials let children repeat, pause and proceed at their own pace, supporting slow learners and enriching fast ones, and giving practice with immediate feedback.
- Economising time and effort: a good chart, model or short video teaches in five minutes what description cannot teach in thirty, and reusable aids serve class after class and year after year.

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- Supporting inclusion and assessment: enlarged images, captioned video, audio material and interactive quizzes help children with sensory difficulties and let teachers check understanding immediately.

Projected Aids: Kinds, Merits and Limits

Projected aids are those in which an image is enlarged by a device onto a screen or wall. They include the slide and filmstrip projector (now largely historical), the overhead projector with transparencies, the epidiascope, educational films and television, and today the multimedia projector and interactive whiteboard connected to a computer, through which slides, photographs, animations, simulations and videos are shown. Their merits are considerable: images are large and visible to the whole class; colour, motion and sound combine for strong impact and retention; magnification reveals details (the parts of a flower, the working of a pump) that the real object is too small to show; digital projection can pause, replay, zoom and link to the internet's vast resources; and a prepared presentation brings order and pace to a lesson. Their limits are equally real and must be stated critically. Projected aids depend on electricity, equipment, maintenance and a room that can be darkened — conditions unreliably present in many Pakistani elementary schools, where a single failed bulb or load-shedding can collapse a planned lesson. Equipment is expensive to buy and repair, teachers need training not only to operate it but to select and sequence content, and projection is easily misused: the teacher becomes a cinema operator showing attractive material that entertains without teaching, children sit passive in the dark, and pace is set by the slides rather than by children's

understanding. The critical conclusion is that projected aids are powerful servants of clear objectives and dangerous masters when they substitute spectacle for pedagogy.

Non-Projected Aids: Kinds, Merits and Limits

Non-projected aids need no projection device and form the everyday working kit of the elementary teacher. They include the chalkboard (still the most flexible aid of all — for writing, drawing, building up diagrams step by step and recording children's own contributions); charts, pictures, posters and flashcards; maps and globes; models — real objects (realia), specimens, working models and mock-ups; flannel boards, magnetic boards and bulletin boards; graphs and diagrams; puppets, toys and play materials; and printed materials from textbooks to supplementary readers. Their merits are the mirror image of the projected family's weaknesses: they are cheap or free, especially when teacher-made from local materials; they need no electricity and cannot break down at the crucial moment; many are three-dimensional and can be handled, so children learn by touch and manipulation, not sight alone; displays remain visible for days, reinforcing learning incidentally; and making aids involves teachers and children in creative, satisfying work. Their limits are that images are smaller (a chart may not be legible from the back bench), quality depends on the teacher's drawing and lettering skill, storage and preservation are problems, and a chart — being static and two-dimensional — cannot show movement or process as film can. Critically, then, neither family is 'better': the projected aid wins on scale, motion and impact, the non-projected on cost, robustness, handling and permanence, and the wise teacher holds both in repertoire.

Table 1: Projected and non-projected aids at a glance

Feature	Projected aids	Non-projected aids
Examples	Multimedia projector, OHP, films, slides, interactive board	Chalkboard, charts, models, real objects, flashcards, flannel board
Cost and infrastructure	High; need power, screen, maintenance	Low; mostly teacher-made, no power needed
Visibility and impact	Very large, coloured, moving, with sound	Smaller; static; but models and realia can be handled
Learner activity	Mostly watching/listening unless teacher builds in tasks	Often manipulative and participatory
Main risks	Breakdown, passivity, entertainment without learning	Poor legibility/quality, storage, no motion

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Selecting Aids Effectively

Selection should be governed by principles, not by availability or fashion. First, fitness for the objective: choose the aid that does the needed job — a model to show structure, a film to show process in motion, a flashcard set for drill, a chart for a summary that must remain visible. Second, fitness for the learners: language level, age, prior experience and class size (the aid must be legible or audible to the last bench). Third, accuracy and quality: aids must be scientifically correct, up to date, culturally appropriate, clear and uncluttered — a wrong model teaches error efficiently. Fourth, practicality: cost, local availability, durability, ease of transport

and use, and the teacher's own ability to operate it confidently. Fifth, the principle of the simplest effective aid: if a real leaf teaches what a costly simulation teaches, bring the leaf; technology is justified by learning gained, not by money spent. Finally, prefer, especially in under-resourced schools, aids made from local, recycled and natural materials, which also root learning in the children's own environment.

Using Aids Effectively

Effective use follows a rhythm of preparation, presentation and follow-up. The teacher previews the aid completely (never show an unseen video), checks equipment and room beforehand, and prepares the class with a purpose for watching or examining — questions to answer focus attention better than 'watch carefully'. During presentation the aid is integrated with talk and activity: the teacher points, explains, pauses, asks, lets children come forward to handle, label or demonstrate, and never lets any aid run so long that children become an audience instead of a class; projected material especially should be broken into short segments with discussion between. The aid is displayed at the right height, in good light (or proper darkness), for the right length of time — and removed or covered when its moment passes, since a stale aid becomes wallpaper. After use, learning is consolidated by questions, a short task, drawing or writing based on the aid, and the teacher evaluates honestly: did the aid help the objective, where did attention wander, what will be used differently next time? Aids are stored, catalogued and shared among teachers, and promising ones — children's own models and charts included — build a school resource corner over time.

Conclusion

To conclude, instructional technology is the systematic use of media, materials and design knowledge to make learning effective — far more than gadgets, and never a substitute for the teacher. Its functions are to concretise the abstract, extend experience across time and space, motivate, clarify, individualise and economise teaching. Projected aids offer scale, motion and impact at the price of cost, power and passivity risks; non-projected aids offer cheapness, robustness and handling at the price of size and motion. Effectiveness therefore lies not in the aid but in the teacher's choices: select by objective, learner, accuracy and practicality, preferring the simplest aid that does the job; prepare, involve children actively during use, and follow up with tasks and honest evaluation. A teacher who follows these principles can teach powerfully with a leaf, a chart and a chalkboard — and will use a projector, when one is available, to genuinely greater effect.

Question 2: Sensory and Physical Problems of Elementary Children and Educational Responses (20 Marks)

Identify the sensory and physical problems that may occur among elementary school children. Discuss appropriate educational responses to these problems. (20)

Introduction

A significant number of elementary school children carry sensory or physical problems that directly limit their learning — and the tragedy is that many of these problems are minor, correctable, or easily accommodated, yet go unnoticed for years while the child is blamed for

inattention, dullness or misbehaviour. The child who cannot see the board copies wrongly and is punished for carelessness; the child who cannot hear clearly is called disobedient; the child with chronic pain or malnutrition is called lazy. Teachers are not doctors and must not pretend to be, but they are the adults who observe children daily, in learning situations, and compare them with their peers; they are therefore the first line of identification and the managers of the educational response. This answer identifies the main sensory and physical problems found among elementary children — of vision, hearing, speech, motor functioning and general health — and discusses the educational responses appropriate to each, within an inclusive approach that educates the child in the ordinary classroom wherever possible.

Visual Problems

Vision problems are the most common sensory difficulty in schools. They include refractive errors — myopia (short sight: the child sees near objects clearly but not the board), hyperopia (long sight: near work strains and blurs, causing headache and avoidance of reading) and astigmatism (distorted vision); squint (strabismus), in which the eyes do not align and which, untreated, can cost the sight of one eye; colour-vision deficiency, which affects some boys and interferes with colour-coded work; and low vision or blindness from causes such as congenital cataract, injury or vitamin A deficiency, historically a significant cause of childhood blindness in Pakistan. Warning signs the teacher can observe include holding books very close or far, squinting, rubbing eyes, tilting the head, frequent headaches, losing the place in reading, avoiding board work and deteriorating written work despite obvious intelligence. The first response is referral — to parents and through them to an eye specialist or school health service

— because spectacles correct the majority of cases completely, and early treatment of squint is time-critical. Educationally, the teacher seats the child at the front, writes large and clearly on the board, reads aloud what is written, provides large-print or well-spaced materials, ensures good lighting without glare, gives extra time for copying, and ensures the child with low vision uses high-contrast materials, magnifiers, audio resources and orientation support, coordinating with specialists while keeping the child fully part of class life.

Hearing Problems

Hearing loss in elementary children is often temporary and treatable, which makes its neglect doubly unfortunate. Conductive loss arises from wax blockage, foreign objects, and above all middle-ear infection (otitis media), common in young children and often following colds; it fluctuates, so the child hears on some days and not others and is judged inconsistent. Sensorineural loss, from congenital causes, infections such as mumps or meningitis, or noise, is permanent and may range from mild to profound deafness. The educational damage is multiplied because hearing underlies language: the hard-of-hearing child misses vocabulary, mishears instructions, develops unclear speech and limited language, and falls behind in reading. Signs include inattentiveness (especially when not facing the speaker), requests for repetition, watching lips intently, turning one ear towards sound, loud or unclear speech, ear discharge or pain, and poor response to being called from behind. Responses begin with referral for medical treatment and audiometric assessment, and hearing aids where prescribed. In class the teacher seats the child near the front, faces the class when speaking, speaks clearly at natural pace without shouting, writes key instructions and vocabulary on the board, checks

understanding privately rather than by public repetition, reduces background noise, pairs the child with a supportive buddy, and uses visual aids generously — while the profoundly deaf child needs specialist provision (sign language, resource teachers) arranged through the special education system, with the class taught to include him socially.

Speech and Language Problems

Speech problems affect the child's ability to express himself and be understood, and at elementary age they carry heavy social costs because children tease what is different. Common difficulties include articulation disorders (substituting or omitting sounds beyond the age when this is normal), stammering or stuttering — repetition, prolongation or blocking of sounds, often worsened by anxiety and by being hurried or mocked — voice disorders from vocal strain or nodules, and delayed or disordered language, where the child's vocabulary, sentence formation or comprehension lags seriously, sometimes accompanying hearing loss, intellectual disability or severe environmental deprivation. The teacher's response is behavioural and referable: refer to a speech therapist or specialist where available; give the child time to finish without interruption or completing his sentences; listen to content, not delivery; never permit teasing, and build the child's confidence through activities where he succeeds; avoid putting the stammering child under sudden oral pressure while gently including him in talk as he tolerates it; and enrich language daily through conversation, story and rhymes for children whose language is delayed. Punishing, imitating or drawing attention to defective speech is prohibited practice — it deepens the problem it pretends to correct.

Physical and Motor Problems

Physical problems include orthopaedic and neuromuscular conditions: cerebral palsy, in which early brain injury affects movement and posture (with intelligence often unaffected — a fact teachers must remember); the after-effects of poliomyelitis, still seen in Pakistan though greatly reduced by immunisation; muscular dystrophy and other progressive conditions; limb deficiency, congenital or from accidents; spina bifida; and milder but numerous difficulties of coordination — the clumsy child whose fine motor problems make handwriting slow, untidy and exhausting and whose gross motor difficulties exclude him from games. Add to these the children temporarily limited by fractures, burns or surgery. Educational responses centre on access, adaptation and inclusion: seating and positioning advice (special chairs, footrests) from physiotherapists; classroom organisation that removes physical barriers, keeps aisles clear and places the child's materials within reach; adapted tools — thick pencils and grips, sloped writing surfaces, extra time and reduced copying load, acceptance of oral or typed responses when writing is the barrier rather than the thinking; adapted physical education that includes rather than excuses the child (with medical guidance); exemption from punishing physical drills; and active cultivation of peer acceptance, since social rejection wounds these children more than the physical limitation itself. Referral connects families to orthopaedic, physiotherapy and rehabilitation services and to assistive devices through health and social welfare channels.

General Health Problems Affecting Learning

Beyond the senses and limbs, several health conditions silently shape school performance. Malnutrition and anaemia — widespread among Pakistani elementary children — produce

tiredness, poor concentration, frequent absence and stunted growth; worm infestation and chronic hunger act similarly. Epilepsy requires the teacher to know simple seizure first aid (protect from injury, time the seizure, recovery position, when to seek help), to administer the school side of medication routines faithfully, and to fight stigma by calm normality. Asthma and allergies need inhaler access, awareness of triggers and modified exertion. Diabetes, heart conditions and chronic illnesses require individual care plans made with parents and doctors, watchfulness for warning signs, and flexibility over absence and workload during illness. Dental pain, untreated, is a common and overlooked cause of inattention and absence. The school-level responses form a health-supporting system: periodic screening and health records, a clean environment with safe water, toilets and hand-washing, attention to nutrition (and support for school meal or supplementation programmes where they exist), physical activity, health education woven into the curriculum, prompt communication with parents, and standing referral links with the nearest health facility.

Table 1: Problems, signs and first responses — summary

Problem area	Typical classroom signs	Teacher's first responses
Vision	Squinting, book held close, headaches, copying errors	Front seat, clear board work, referral for eye testing/spectacles
Hearing	Inattention, repetition requests, unclear speech, ear discharge	Face class, seat near front, write instructions, medical/audiology referral

Speech	Stammering, sound errors, very limited language	Patience, no teasing, therapist referral, language-rich activities
Motor/physical	Clumsiness, untidy slow writing, mobility difficulty, fatigue	Adapted tools and seating, extra time, barrier-free inclusion, physio referral
General health	Tiredness, absence, pain, seizures, breathlessness	Health records, care plans, hygiene/nutrition, first-aid readiness, parent liaison

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The Inclusive Framework of Response

These specific responses rest on common principles. Identification must be systematic — observation, simple screening (vision charts, whisper tests), records and parent information — not left to chance. Responses should follow the inclusive principle that the child is educated with his peers wherever possible, with adjustments to teaching (differentiated tasks, assistive materials, flexible assessment) made by the class teacher, supported by specialists, rather than by removing the child. An individual plan, however brief, recording the problem, adjustments and review dates, converts goodwill into continuity across teachers and years. Parents are partners: they hold medical history, implement treatment such as spectacles-wearing and medication, and reinforce confidence at home; schools that blame parents lose their best allies. Finally, the teacher's attitude is itself an intervention: children take their cue from the teacher's

respect, and a classroom where difference is ordinary and help is unremarkable allows the child with a problem to remain, socially and academically, a child first.

Conclusion

To conclude, elementary children may present visual problems (refractive errors, squint, low vision), hearing problems (conductive and sensorineural loss), speech and language disorders, physical and motor conditions such as cerebral palsy and polio after-effects, and general health burdens including malnutrition, epilepsy, asthma and chronic illness — each capable of seriously obstructing learning while masquerading as carelessness or dullness. The appropriate educational responses are consistent: observe and screen, refer promptly for medical or specialist help, adjust seating, materials, methods, tools and assessment within an inclusive classroom, plan individually, work with parents, and protect the child's dignity and peer acceptance. Much of the damage these problems do is not caused by the condition itself but by its being missed; the alert, knowledgeable elementary teacher is therefore one of the most effective health interventions a child will ever meet.

Question 3: Principles of Effective Classroom Management; Teacher Behaviour, Communication and Personal Dimensions (20 Marks)

Discuss the principles of effective classroom management. How do teacher behaviour, communication, and personal dimensions contribute to a well-managed classroom? (20)

Introduction

Classroom management is the set of actions by which a teacher creates and maintains an environment in which learning can happen: orderly without being oppressive, busy without chaos, and safe enough — physically and emotionally — for children to risk trying, erring and asking. Research consistently shows that management is the foundation skill of teaching: the best-planned lesson fails in a disorderly room, while a well-managed classroom multiplies the value of everything taught in it. Management is often confused with discipline, but discipline (responding to misbehaviour) is only its smallest, last-resort part; the greater part is prevention — the design of routines, relationships, communication and engaging teaching that makes misbehaviour rare. This answer discusses the principles of effective classroom management and then explains how three human factors — teacher behaviour, communication, and the teacher's personal dimensions — contribute to a well-managed classroom at the elementary level.

Principles of Effective Classroom Management

The first principle is prevention through organisation. The physical room should be arranged for movement and sight-lines: aisles clear, materials accessible, frequently used resources stored where children can fetch and return them without congestion, seating arranged (and changed) to suit the activity — rows or groups, pairs — and displays that support current learning. Time is organised equally deliberately: lessons begin promptly with an engaging opening, transitions between activities are swift and rehearsed, materials are ready before children arrive, and no dead time is left in which disorder breeds. The second principle is the establishment of a small

number of clear rules and routines. Rules (three to five, positively stated — 'we listen when someone is speaking', 'we keep hands and feet to ourselves', 'we care for our things') are most effective when explained, illustrated and, with older elementary children, discussed and agreed with the class, then displayed and consistently applied. Routines — how to enter, distribute books, ask for help, sharpen a pencil, leave for the toilet, end the lesson — are taught and practised like any other content in the first weeks, because a class that knows exactly what to do needs little telling-off for the rest of the year.

The third principle is consistency joined with fairness: consequences — preferably logical and related to the act (the spilled paint is cleaned up; the misused material is put away for a time) — follow calmly and predictably, for favourites and offenders alike, since perceived injustice is the fastest solvent of a teacher's authority. Fourth is positive reinforcement: specific praise, recognition, responsibilities and privileges that catch children being good and make desired behaviour more attractive than misbehaviour; research and experience both show that a high ratio of positive to negative attention builds order, while a regime of pure reprimand builds only resentment and skill in concealment. Fifth is engagement: the strongest management tool is a well-paced, interesting lesson in which every child has a task at the right level — Jacob Kounin's classic studies showed that teachers who prevent disorder do so mainly through 'with-it-ness' (awareness of everything happening, communicated to the class), overlapping (handling two things at once), smooth transitions and maintaining group focus and momentum. Sixth, responses to misbehaviour are graduated and dignified: non-verbal signals and proximity first, a quiet private word next, application of the agreed consequence, and only for serious or repeated problems the involvement of head teacher and parents — always addressing the

behaviour, never attacking the child's character, and never using corporal punishment, sarcasm or public humiliation, which are prohibited and counterproductive. Finally, management includes partnership beyond the room: consistent expectations shared with colleagues, and early, respectful communication with parents, so that home and school pull together.

The Contribution of Teacher Behaviour

Teacher behaviour is management made visible. Children read the teacher continuously: his punctuality and preparation announce whether the lesson matters; his calm under provocation teaches emotional control more powerfully than any lecture on it; his fairness in distributing turns, praise and consequences decides whether his rules are respected or merely obeyed in his presence. Effective managerial behaviour includes moving about the room rather than teaching from behind the desk (proximity quietly ends most off-task behaviour), scanning continuously, using children's names, starting and ending decisively, varying voice and activity before restlessness peaks, and following through — never threatening what will not be done or promising what cannot be kept, since credibility once lost is the management system itself lost. Equally significant is the balance of firmness and warmth: the research-supported ideal is the authoritative teacher — high in control and high in affection and respect — as against the authoritarian teacher (control without warmth, producing fearful or rebellious classes) and the permissive teacher (warmth without control, producing affectionate chaos). Children cooperate most with adults by whom they feel both securely bounded and genuinely valued.

The Contribution of Communication

Nearly all management is transacted through communication, verbal and non-verbal. Clear communication prevents the largest single cause of disorder — confusion: instructions are given in short steps, in language children understand, with demonstration, and checked ('Tell me what you will do first') before activity begins; expectations for noise level, movement and product are stated in advance, not invented as complaints afterwards. The teacher's voice is an instrument — volume, pace and tone varied deliberately, quieter rather than louder to regain attention, with trained signals (a raised hand, a countdown, a clapped rhythm) replacing shouting. Listening is the half of communication most often neglected: the teacher who listens to children's questions, excuses and grievances — and is seen to act fairly on what he hears — earns the cooperation that orders a room, while the child whose explanation is never heard stops offering explanations and starts offering defiance. Non-verbal communication — facial expression, eye contact, gesture, posture and physical proximity — frequently manages more effectively than words: a look, a pause, standing beside a restless group, all correct without interrupting learning or humiliating the child. Constructive communication with parents (early, specific, solution-focused contact, not only complaints) and clear records complete the system.

The Contribution of the Teacher's Personal Dimensions

Behind behaviour and communication stands the person. The teacher's personal dimensions — temperament, emotional stability, patience, enthusiasm, empathy, sense of humour, integrity and self-knowledge — set the ceiling of what techniques can achieve, because children respond to who the teacher is long before they analyse what he does. Enthusiasm is contagious: a

teacher visibly interested in his subject and glad to be with children creates the motivational climate in which management problems shrink. Empathy — the effort to see the fidgeting, the defiance and the tears from the child's side, knowing something of his home, hunger, fears and yesterday — converts responses from punishment to problem-solving and is the core of restorative discipline. Emotional self-regulation is indispensable: the teacher who can absorb provocation without retaliation keeps authority and models the very self-control he is teaching; the teacher who shouts, mocks or hits teaches shouting, mockery and hitting. Consistency of character — honesty, keeping confidences, admitting his own mistakes and apologising — builds the trust on which older elementary children base their decision to cooperate. Self-reflection completes the personal dimension: the well-managed classroom usually belongs to a teacher who asks, after difficult days, what in his planning, timing or tone contributed, and adjusts — treating management as professional craft rather than blaming children as a class.

- A practical self-check for teachers: Are my rules few, positive and known? Are routines automatic? Is praise outnumbering reprimand? Do I move, scan and use names? Are my instructions checked, not just given? Do I correct privately and praise publicly? Would my class behave if I stepped out for five minutes — the acid test of management that rests on relationship rather than fear?

Conclusion

To conclude, effective classroom management rests on principles of prevention and positivity: organised space and time, few clear rules and well-taught routines, consistency and fairness, abundant specific reinforcement, engaging and well-paced teaching in Kounin's sense,

graduated dignified responses to misbehaviour, and partnership with colleagues and parents. These principles live or die through the teacher: through his behaviour — prepared, mobile, calm, firm and warm in the authoritative balance; through his communication — clear instructions, a governed voice, genuine listening and skilful non-verbal signals; and through his personal dimensions — enthusiasm, empathy, emotional control, integrity and reflection. Management so understood is not a technique for silence but a climate for learning, in which order serves freedom: children who know what is expected, feel respected and are busy with worthwhile work rarely need to be disciplined at all.

Question 4: Measurement and Evaluation; Measures of Central Tendency and Variability (20 Marks)

Differentiate between measurement and evaluation. Explain how measures of central tendency and variability can be used to interpret students' performance. (20)

Introduction

Teachers constantly make judgements about learning: who has understood fractions, whether the class is ready to move on, whether teaching method A worked better than method B. Sound judgement needs evidence, and evidence in education is produced by measurement and interpreted by evaluation — two terms so often used interchangeably that their difference is worth stating precisely, because confusing them produces real errors, such as treating a test score as if it were the whole worth of a child. The quantitative heart of classroom evidence is descriptive statistics: measures of central tendency, which summarise a set of scores by a single

typical value, and measures of variability, which show how spread out the scores are around that value. This answer first differentiates measurement from evaluation, and then explains the main measures of central tendency and variability with a fully worked example from a class test, showing how the two families of measures together — never either alone — should be used to interpret students' performance.

Measurement and Evaluation Differentiated

Measurement is the process of assigning numbers (or ordered categories) to attributes of persons, objects or events according to rules: a test yields 68 marks, a scale records 32 kilograms, a checklist counts four of five skills demonstrated. Measurement is quantitative, comparatively objective and value-free in itself — it describes how much of an attribute is present, but says nothing about whether that amount is good, adequate or alarming. Evaluation is the process of making a value judgement about the worth or quality of something on the basis of measurement and other evidence compared against criteria or objectives: deciding that 68 marks represents satisfactory mastery, that a pupil needs remedial help, that a textbook is unsuitable, or that a school programme should continue. Evaluation therefore includes measurement but goes beyond it — it adds standards, interpretation, qualitative information (observation, work samples, background) and a decision. Assessment is the broader term embracing both: gathering evidence (assessment), quantifying it (measurement) and judging and acting on it (evaluation).

Table 1: Measurement and evaluation compared

Aspect	Measurement	Evaluation
Nature	Assigning numbers to attributes by rules	Making value judgements and decisions
Question answered	How much? How many?	How good? Is it enough? What next?
Basis	Tests, scales, counts, observations quantified	Measurements plus criteria, objectives and qualitative evidence
Scope	Narrow; one attribute at a time	Broad; may cover the whole learner or programme
Objectivity	Relatively objective and precise	Involves judgement; values enter openly
Example	Ahmed scored 54/100 in mathematics	Ahmed's performance is below the class standard; he needs remedial work in fractions

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The distinction matters practically. Because measurement is limited to what tests can quantify, an education that worships marks will neglect attitudes, skills and creativity that it has not measured; because evaluation involves judgement, it must be made carefully, on multiple kinds of evidence, and never on a single score alone. Tests and examinations, mark sheets and report cards are instruments of measurement serving evaluation: their quality (validity — measuring

what was taught and intended; reliability — consistency) limits the quality of every evaluation built upon them.

Measures of Central Tendency

A measure of central tendency is a single value that represents the centre or typical performance of a group. The three measures used in education are the mean, the median and the mode. The mean (arithmetic average) is the sum of all scores divided by their number; it uses every score, is the most precise and most widely used measure, and is the basis of further statistics, but it is pulled up or down by extreme scores. The median is the middle score when all scores are arranged in order (for an even count, the average of the two middle scores); it is unaffected by extremes and is the better representative when a few very high or low scores distort the mean. The mode is the most frequently occurring score; it shows the commonest level of performance and is the only measure usable for purely categorical data, though a distribution may have no mode or more than one.

A Fully Worked Example

Consider the marks (out of 100) obtained by the 20 pupils of a Class VI in a mathematics test, arranged in ascending order: 42, 55, 58, 60, 62, 65, 65, 65, 68, 70, 72, 72, 74, 75, 78, 80, 82, 85, 88, 92. The sum of the scores is 1,408, so the mean is 1,408 ÷ 20 = 70.4 marks — the class's average performance. The median is the average of the 10th and 11th scores, (70 + 72) ÷ 2 = 71, meaning that half the class scored at or below 71 and half at or above it. The mode is 65, the score obtained by three pupils, more than any other single score. Already the three values together tell a richer story than any one alone: they lie close together (65–71), indicating a fairly

symmetrical distribution bunched slightly at the lower-middle; the fact that the mode (65) sits below the mean (70.4) hints that a cluster of pupils is stuck around the low sixties even though the average looks respectable — a remedial group is hiding inside a satisfactory mean.

Table 2: Worked example — Class VI mathematics marks (n = 20)

Measure	Calculation	Value	Interpretation
Mean	1,408 ÷ 20	70.4	Average performance of the class
Median	(70 + 72) ÷ 2	71.0	Middle score; half the class is above/below it
Mode	Most frequent score	65	Commonest score, obtained by 3 pupils
Range	92 − 42	50	Gap between highest and lowest scorer
Variance (population)	Average of squared deviations from the mean	139.14	Spread of scores in squared units
Standard deviation	√139.14	11.80	Typical distance of a score from the mean (70.4)

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Measures of Variability

Variability (dispersion) describes how widely scores are spread around the centre. The simplest measure is the range — the difference between the highest and lowest scores — which in our example is 92 − 42 = 50 marks: useful as a quick warning that the class contains both a pupil near failure and a pupil near excellence, but crude, since two scores alone determine it and it says nothing about the pupils in between. The standard deviation is the professional measure: it is the square root of the variance, the variance being the average of the squared differences of every score from the mean. Squaring gives more weight to scores far from the mean, and taking the square root returns the result to the original units (marks). For our class the variance is 139.14 and the standard deviation is √139.14 ≈ 11.80 marks, meaning that a typical pupil's score lies about 12 marks from the mean of 70.4 — so most pupils fall roughly between 59 and 82. A small standard deviation marks a homogeneous class (scores bunched together, taught suitably as one group); a large one marks a heterogeneous class needing differentiated work. Related tools include the quartiles and inter-quartile range (the spread of the middle half of pupils, robust against extremes) and percentiles, which locate an individual pupil within the group ('Sara stands at the 80th percentile' means she scored as well as or better than 80 per cent of the class).

Using the Two Families Together to Interpret Performance

The central lesson is that centre and spread must always be read together, because the same mean can hide opposite realities. Two classes can both average 70: Class A with scores 68, 70, 72, 70, 70 (standard deviation about 1.3) is uniform — one teaching pace fits all; Class B with

scores 40, 60, 70, 80, 100 (standard deviation 20) contains pupils heading for failure and for distinction in the same room, and teaching to its mean would bore one end and bewilder the other. Interpreting a single pupil requires both families too: a score of 60 is poor in a class with mean 70 and SD 5 (two standard deviations below average) but unremarkable in a class with mean 62 and SD 12. Teachers use these interpretations to (1) describe class achievement honestly to heads and parents; (2) identify groups — high achievers needing enrichment, the modal cluster needing consolidation, the tail needing diagnosis and remediation — rather than reteaching everything to everyone; (3) compare groups or occasions fairly (comparing two classes' means without their spreads misleads; comparing a class's mean this term with last term shows growth); (4) judge test quality — a test on which everyone scores near the mean with tiny spread fails to discriminate and may be badly designed, while a bimodal spread may reveal an untaught topic splitting the class; and (5) convert raw scores into grades and standards, since fair grading depends on where scores lie within the distribution. Two cautions complete the picture: statistics summarise groups and cannot capture an individual child's circumstances, effort or unmeasured abilities, so evaluation must add qualitative evidence; and small numbers mislead — the mean of five pupils swings wildly with one absence — so interpretations must be proportionate to the evidence.

Conclusion

To conclude, measurement assigns numbers to attributes by rule and answers 'how much?', while evaluation judges worth against criteria and answers 'how good, and what should be done?'; measurement serves evaluation, and neither a score nor a judgement is complete

alone. Measures of central tendency — mean, median and mode — summarise where a group's performance centres (in the worked example, 70.4, 71 and 65), and measures of variability — range, variance and standard deviation (50, 139.14 and 11.80 in the example) — summarise how widely it spreads. Read together, they let the teacher describe performance truthfully, find the groups hidden inside an average, compare classes fairly, locate individuals within their group and plan teaching that fits reality. Read separately, or worshipped as ends in themselves, they mislead — which is why statistical literacy belongs to the professional equipment of every elementary teacher.

Question 5: Problems and Issues of Elementary Education in Pakistan; Female Education and Teacher Preparation (20 Marks)

Analyze the major problems and issues of elementary education in Pakistan, with particular reference to female education and teacher preparation. Suggest practical measures for improvement. (20)

Introduction

Pakistan's elementary education presents a paradox: the constitutional promise could hardly be nobler — free and compulsory education for every child aged five to sixteen under Article 25-A — yet the ground reality includes one of the world's largest out-of-school populations, weak learning outcomes among those who do attend, and deep inequalities of gender, region and wealth. Analysing the problems honestly is not an exercise in pessimism; it is the necessary first step towards measures that are practical rather than rhetorical, since Pakistan's education

history is littered with well-worded policies that failed at the point of implementation. This answer analyses the major problems of access, quality, equity, facilities, curriculum and governance; examines two issues in the particular depth the question requires — female education and teacher preparation, which are in fact closely connected — and concludes with practical, sequenced measures for improvement.

Major Problems and Issues: An Overview

The access problem comes first: estimates commonly place out-of-school children in Pakistan above twenty million, the second-largest such population in the world, and the elementary ages contribute the largest share — children who never enrol, especially in poor and remote communities, and children who enrol but drop out before completing Class V, then Class VIII, worn down by poverty, child labour, distance, illness and the perceived irrelevance of what school offers. Those who stay face the quality problem: national assessments (such as the ASER surveys) repeatedly find that roughly half of Class V children cannot read a simple Class II-level story in Urdu or a regional language, and similar proportions cannot do two-digit division — learning poverty that converts years of schooling into little capability. Behind both lie the familiar material deficits: schools without boundary walls, toilets, drinking water or electricity; overcrowded urban classrooms beside under-used rural ones; a large stock of one- and two-teacher multi-grade schools; shortages and politically influenced postings of teachers; and teacher absenteeism that supervision rarely corrects. Curricular and linguistic issues compound the material ones: overloaded textbooks, examination pressure towards rote memorisation, and the unresolved medium-of-instruction question, in which children's mother tongues are

displaced early by Urdu and nominal English-medium teaching that many teachers themselves cannot sustain. Governance issues run underneath everything: education spending persistently well below the promised four per cent of GDP, frequent policy discontinuity, weak data and accountability systems, and the fragmentation of provision among public, low-fee private, madrassa and non-formal sectors with uneven standards. Finally, equity fails on every axis — girls against boys, rural against urban, poor against rich, and children with disabilities against all — so that the system gives least to those who need it most.

Female Education: Problems and Issues

Girls' disadvantage begins before school age and widens at every transition. Female literacy trails male literacy by a wide margin, girls form the larger share of out-of-school children, and their enrolment, already lower at primary level, drops sharply at the middle stage — precisely the elementary years this course covers. The causes are interlocking. Distance and safety dominate parental decisions: a primary school in the village may be acceptable for a daughter, but a middle school in the next settlement, involving an unaccompanied journey, often is not, and concerns about harassment and honour (in the community's own terms) lead families to withdraw girls at puberty. The absence of female teachers is itself a cause — many parents will send girls only to a school with women teachers, and rural girls' schools chronically lack them, partly because educated women are scarce in exactly those villages (the product of yesterday's failure) and partly because women teachers posted far from home face transport, housing and safety difficulties that the system does not solve. Missing facilities — above all a boundary wall and a functioning toilet — are not minor amenities for adolescent girls but conditions of

attendance. Poverty sharpens every choice: girls' labour in home, fields and siblings' care is valuable, early marriage ends schooling for many, and when a family can educate only some children, sons are still too often preferred as the perceived earners. The consequences extend far beyond the girls themselves: uneducated mothers are more likely to have children who are malnourished, unhealthy and themselves out of school, so female education is the highest-leverage investment in the entire system — its failure is self-perpetuating, and its success likewise.

Teacher Preparation: Problems and Issues

If girls' education is the system's deepest equity failure, teacher preparation is its deepest quality failure, because no curriculum, textbook or building teaches by itself. Pre-service preparation has historically been thin and theoretical: the older PTC and CT certificates were short, heavily lecture-based, weak in classroom practice and in subject knowledge itself — many elementary teachers have insecure command of the mathematics and science they teach — and even the newer ADE and B.Ed programmes vary greatly in quality, with teaching practice often brief, unsupervised and conducted in untypical settings. Recruitment has not always protected the classroom: political influence, and in some places outright purchase of posts, have placed unmotivated candidates in schools, while meritorious teachers are posted without regard to subject or the rural hardship involved. In-service development, which should repair these weaknesses continuously, has typically consisted of short, one-off, cascade-style trainings — knowledge diluted at each level of the cascade, no classroom follow-up, no coaching, and no consequence in career progression — so that training certificates accumulate without teaching

changing. Teachers' conditions complete the discouraging picture: low relative pay and status, multi-grade loads, non-teaching duties (census, elections, polio campaigns) that remove them from classrooms, weak academic support from supervisors who function as inspectors rather than mentors, and negligible structured career paths rewarding classroom excellence. The result is a profession asked to perform the system's hardest task — teaching first-generation learners, in mother tongues not their own medium of training, in classes of forty-plus — with the least preparation and support of any cadre.

Practical Measures for Improvement

- Finance and govern for results: raise education spending steadily towards the 4% of GDP commitment with the increment targeted at elementary level; protect allocations from mid-year cuts; publish school-level data on enrolment, attendance and learning, and hold districts accountable for learning outcomes, not construction alone.
- Complete access with retention: map out-of-school children locality by locality; open or upgrade schools within safe walking distance, using community, mosque and double-shift schools where buildings are scarce; enforce Article 25-A through local committees; attack dropout with early-warning attendance tracking and follow-up of absent children.
- Measures specifically for girls: recruit female teachers from the local community (raising local girls' education through reserved pathways and incentives, so the supply problem solves itself); post women near home with safe transport and, where needed, residential support; guarantee boundary walls and toilets in every girls' school before other embellishments; provide stipends, free textbooks, uniforms and transport support

conditional on girls' attendance; run second-chance/non-formal programmes for girls who have dropped out; and engage fathers, elders and religious leaders — whose endorsement changes community decisions — in enrolment campaigns.

- Rebuild teacher preparation: raise and enforce entry standards with transparent, merit-based, test-verified recruitment; make pre-service education (ADE/B.Ed) genuinely professional — strong subject knowledge, child psychology, mother-tongue early-grade methods, extended supervised teaching practice in real elementary classrooms; replace cascade training with school-based continuous professional development: cluster meetings, classroom observation and coaching by mentor teachers, and structured lesson support, linked to career progression.
- Support the serving teacher: rationalise postings and transfers by rule; reduce non-teaching duties; ensure every school has the basic teaching kit and teachers' guides that make good methods feasible; create a career ladder that rewards excellent classroom teachers without forcing them into administration.
- Fix learning directly: prioritise foundational literacy and numeracy in Classes I–V with structured, level-based teaching (grouping children by actual level for part of the day, as in 'Teaching at the Right Level' approaches proven in the region); begin instruction in the child's mother tongue with planned transition to Urdu and English; prune curriculum overload; and assess learning annually with published results so improvement is visible and undeniable.

- Include the excluded: identify and include children with disabilities through screening, teacher orientation and resource support; bring madrassa and non-formal learners into certified equivalency pathways rather than parallel dead ends.

Sequencing matters if these measures are to be practical rather than a wish-list. The first phase needs no new law and little new money: attendance tracking, toilet and wall repair in girls' schools, local female recruitment against existing vacancies, structured foundational-learning periods, and coaching-based in-service support within existing training budgets. The medium term builds the pipeline — reformed pre-service programmes, career ladders, local-language materials — while the long term secures financing and community norms. What Pakistan cannot afford is the historical pattern of announcing the long term while neglecting the first phase.

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Conclusion

To conclude, elementary education in Pakistan is constrained by incomplete access and early dropout, low learning despite years in school, material and governance deficits, and inequities that fall hardest on girls, the rural poor and children with disabilities. Female education fails through distance, safety, missing female teachers and facilities, poverty and early marriage — and its failure reproduces the problem across generations. Teacher preparation fails through weak, theoretical pre-service education, compromised recruitment, cascade in-service training without follow-up, and poor conditions and status. Yet none of these problems is mysterious or insoluble: the practical measures — funded and published accountability, local female teachers and safe, equipped girls' schools, merit recruitment with school-based coaching, mother-

tongue foundational learning taught at the child's level, and community engagement — are known, tested in the region and within reach if sequenced and sustained. The choice before Pakistan is not between plans but between another decade of plans and a decade of implementation.

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