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Name:

Registration No.:

Course Code: 837

Program: MA/MEd Programme

Semester: Autumn 2026

ALLAMA IQBAL OPEN UNIVERSITY, ISLAMABAD

Course: Educational Research (837) • Level: MA/MEd Programme

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 write their assignments in their own words.

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Question 1: Types of Hypotheses and the Steps of the Scientific Method (20 Marks)

Q. No. 1: Explain different types of hypotheses. Explain the steps of the scientific method by giving examples. (20)

Introduction

Every scientific enquiry is guided by a hypothesis: a tentative, intelligent guess about the answer to a research problem, which the researcher then tests against evidence. Without a hypothesis, data collection becomes a blind hunt; with one, the whole enquiry gains direction — what data to collect, from whom, and how to judge the result. Closely connected with the hypothesis is the scientific method, the orderly procedure by which problems are solved and hypotheses verified. This answer first explains the meaning and qualities of a good hypothesis and its different types, with examples, and then describes the steps of the scientific method, illustrating them throughout with one continuous educational example, so that the relation between hypothesis and method becomes clear: the hypothesis is the heart of the scientific method, and the method is the machinery by which the hypothesis is tested.

Meaning and Qualities of a Hypothesis

A hypothesis is a tentative statement of a relationship between two or more variables, proposed as a possible answer to a research problem and capable of being tested. It is not a wild guess: it is based on previous knowledge, observation, theory and experience, and it is stated in a form that evidence can confirm or refute. A good hypothesis is clear and precisely worded; it is testable, meaning that the variables in it can be observed or measured; it is specific rather than vague; it is consistent with known facts and theory; and it is stated simply, dealing with a limited, manageable relationship. Example: “Students of class X who receive regular written feedback on their homework will obtain higher marks in the final examination than students who receive no written feedback.” Here feedback (independent variable) and marks (dependent variable) are both measurable, the population is definite, and the statement can be verified or rejected by an actual study.

Types of Hypotheses

Hypotheses are classified in several ways, and a researcher should know which type he is using. (1) Research (scientific) hypothesis: the general statement of what the researcher expects to find, derived from theory, literature or experience — for example, “Activity-based teaching improves science achievement.” (2) Null hypothesis (H_0): the statement that there is no relationship between the variables and no difference between groups; any observed difference is due to chance. It is the null hypothesis that is actually submitted to statistical test, because statistics can only reject or fail to reject it — for example, “There is no significant difference in science achievement between students taught by activity-based learning and students taught by the lecture method.” (3) Alternative hypothesis (H_1): the statement opposed to the null; it

asserts that a real relationship or difference exists. (4) Directional hypothesis: it specifies the expected direction of the effect — "Girls will score higher than boys in the Urdu reading test." (5) Non-directional hypothesis: it states only that a difference or relationship exists, without saying in which direction — "There is a significant difference between rural and urban students in their attitude towards school." (6) Simple hypothesis: it relates one independent variable to one dependent variable. (7) Complex hypothesis: it relates two or more independent or dependent variables — for example, relating teaching method and intelligence jointly to achievement and attitude. (8) Associative and causal hypotheses: an associative hypothesis states only that variables vary together, while a causal hypothesis states that one variable produces a change in the other and therefore requires an experimental test. (9) Working hypothesis: a preliminary rough hypothesis adopted at the start of a new enquiry to guide exploration, refined later into a precise form.

Table 1: Main types of hypotheses with examples

Type	**Meaning**	**Example**
Research hypothesis	Expected finding based on theory / literature	Regular feedback improves examination marks
Null hypothesis (H_o)	No difference / no relationship; difference is due to chance	No significant difference between two teaching methods
Alternative hypothesis (H_1)	Opposite of null; real difference exists	The two methods differ significantly in achievement
Directional	Direction of effect specified	Girls score higher than boys in reading
Non-directional	Difference stated, direction not specified	Rural and urban students differ in attitude
Simple	One independent and one dependent variable	Homework hours relate to achievement

Complex	Several variables involved	Method and intelligence jointly affect achievement and attitude
Causal	One variable produces change in another	Activity-based teaching causes higher science scores

The Scientific Method: Meaning

The scientific method is the systematic procedure of solving a problem by sensing and defining it, suggesting a tentative answer, collecting evidence, and drawing and verifying a conclusion. It is characterised by objectivity, reliance on observable evidence, precision, verification by others and self-correction. It is used not only in laboratories but wherever problems are solved honestly — including the classroom. Its steps are described below and illustrated by a single example: a teacher notices that many class IX students fail the monthly mathematics test and decides to enquire scientifically.

Steps of the Scientific Method (With Example)

- Step 1 — Sensing the problem: The method begins when a difficulty is felt. Our teacher observes that 60% of class IX students scored below the pass mark in the monthly mathematics test, although the same students performed satisfactorily in other subjects. Something is wrong and demands enquiry.
- Step 2 — Defining the problem: The felt difficulty is narrowed into a precise, researchable question: “Why do class IX students of this school obtain low scores in mathematics?” Terms are defined, the population is fixed and the limits of the enquiry are set, because a vague problem cannot be solved.

- Step 3 — Analysing the problem and reviewing related knowledge: The teacher examines records, talks to students and colleagues and reads related studies. Possible factors emerge: weak foundations from earlier classes, irregular homework, fear of the subject, and teaching that does not check understanding step by step.
- Step 4 — Formulating the hypothesis: From the analysis, a testable tentative answer is framed: "Low achievement in mathematics is mainly due to irregular practice; if students do supervised daily practice of ten sums for eight weeks, their test scores will improve significantly." A null form is also stated for testing.
- Step 5 — Collecting the data: Evidence is gathered according to plan — pre-test scores, homework records, an attitude scale, and, after the supervised practice programme is run, post-test scores. Tools are kept valid and conditions uniform so the evidence is trustworthy.
- Step 6 — Analysing and interpreting the data: Scores are tabulated; means are compared and a t-test applied. Suppose the average improves from 38% to 57% and the difference is statistically significant. The data are interpreted: supervised daily practice appears to be an effective remedy, though weak foundations also need attention.
- Step 7 — Drawing conclusions and verifying: The hypothesis is accepted (in this situation, and tentatively). The conclusion is verified by checking consistency, discussing it with colleagues and — ideally — repeating the procedure with another class. The verified conclusion becomes a generalisation that guides future teaching, and it remains open to correction by later evidence, which is the self-correcting spirit of science.



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Figure 1: Steps of the scientific method, from sensing the problem to verifying the conclusion.

Conclusion

To conclude, a hypothesis is a testable tentative statement of a relationship between variables; it appears as research, null, alternative, directional, non-directional, simple, complex, associative, causal and working hypotheses, each serving a definite purpose in an enquiry. The scientific method is the disciplined path by which such hypotheses are tested: sensing the problem, defining it, analysing it, formulating the hypothesis, collecting data, analysing and interpreting the data, and drawing and verifying conclusions. Together they convert curiosity and guesswork into dependable knowledge. For the teacher-researcher, mastering both is essential, because every sound educational study is a hypothesis travelling through the steps of the scientific method towards a verified conclusion.

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Question 2: The Research Proposal and Its Introduction Component (20 Marks)

Q. No. 2: Describe the research proposal in your own words. Discuss in detail the introduction component of a research proposal. (20)

Introduction

No serious research should begin without a plan. The research proposal is that plan, written before the study is undertaken: it states what the researcher intends to study, why it is worth studying, and how it will be studied, so that supervisors, institutions and funding bodies can judge and approve the work in advance. Among its components, the introduction is the most important, because it presents and justifies the problem itself. This answer first describes the research proposal in plain words — its meaning, purposes and main components — and then discusses the introduction component in full detail: its functions and the elements it must contain, namely the background of the study, statement of the problem, objectives, questions or hypotheses, significance, scope and delimitations, and definitions of terms, with guidance and small examples for each.

What is a Research Proposal? (In My Own Words)

A research proposal is a written outline or blueprint of a proposed study, prepared before the research actually begins. In my own words, it is the researcher's promise and plan presented on paper: it tells the reader exactly what problem will be investigated, why the investigation is needed, what questions will be answered, which people will be studied, what information will be collected and by what tools, how the information will be analysed, and how much time and money the work will require. Just as an architect's drawing precedes a building, the proposal

precedes the research. It serves several purposes. It forces the researcher to think the whole study through clearly before spending time and resources, exposing weaknesses while they can still be corrected. It convinces a university department, supervisor or funding agency that the problem is significant, the plan is workable and the researcher is competent, so that approval, registration or financial support can be granted. It serves as a contract and a guide during the work, against which progress is checked. And it allows experts to suggest improvements at the cheapest stage — the planning stage. A proposal is usually written in the future tense ("the study will be conducted…"), unlike the final report, which is written in the past tense.

Main Components of a Research Proposal (Overview)

- Title page: the exact title of the study, researcher's name, institution and date.
- Introduction: background, statement of the problem, objectives, research questions / hypotheses, significance, scope, delimitations and definitions (discussed in detail below).
- Review of related literature: what previous studies and theory say about the problem, and the gap the present study will fill.
- Methodology (research design): population and sample, research design, instruments / tools, procedure of data collection, and the plan of data analysis.
- Time schedule and budget: a phase-wise timetable and an estimate of costs.
- References / bibliography and appendices: sources cited, and copies of proposed tools.

The Introduction Component — In Detail

The introduction is the opening and foundation of the proposal. Its task is to lead the reader from the broad field of the study to the exact problem, and to prove that the problem is real, important and researchable. A weak introduction leaves the reader asking "so what?"; a strong

one makes the need for the study self-evident. It is built from the following elements, usually in this order.

1. Background of the Study

The introduction opens with the background: a broad, orderly account of the situation from which the problem arises. The writer begins with the general field (for example, the importance of reading skill in primary education), narrows to the national or local situation (reading levels reported in surveys, official concern, previous efforts), and arrives at the specific gap or difficulty that the study addresses. The background is written from general to particular, like a funnel, and it may briefly refer to key facts, statistics and previous findings, reserving the full literature review for its own later chapter. Its purpose is to orient the reader and to show that the researcher understands the context of his problem.

2. Statement of the Problem

This is the heart of the introduction. The problem is stated clearly, precisely and in researchable form — what exactly will be investigated, in whom, and where. A good statement may be written as a declaration followed by questions, or as a direct question. Example: “This study will investigate the effect of supervised daily practice on the mathematics achievement of class IX students in government secondary schools of District Bahawalpur.” Everything vague is avoided: terms are definite, the population and variables are named, and the problem is narrow enough to be completed with available time and resources, yet significant enough to be worth doing.

3. Objectives of the Study

The objectives state, point by point, what the study intends to achieve. They flow directly from the problem statement and later decide the tools and the analysis. For the example above, objectives might be: (i) to compare the mathematics achievement of students receiving supervised daily practice with that of students receiving ordinary instruction; (ii) to find the effect of the practice on students' attitude towards mathematics; (iii) to make recommendations for teachers. Well-written objectives use clear action verbs (to compare, to determine, to assess) and are neither too many nor overlapping.

4. Research Questions and / or Hypotheses

The introduction converts the objectives into answerable research questions and, where the design permits, testable hypotheses with their null forms. Questions suit descriptive studies ("What is the relationship between homework regularity and achievement?"); hypotheses suit experimental and correlational studies. Including them in the introduction shows the reader exactly what evidence the study will produce, and they will be answered, one by one, in the conclusions of the final report.

5. Significance of the Study

This element answers the question: who will benefit from the findings, and how? The researcher explains the theoretical contribution (filling a gap in knowledge) and the practical benefits for named groups — teachers, students, heads, curriculum developers, policy makers and future researchers. In our example, the study is significant because teachers would gain an evidence-based technique, administrators would know whether practice periods deserve

timetable space, and researchers would obtain a baseline for further work. Claims must be realistic; exaggerated promises weaken the proposal.

6. Scope, Delimitations, Limitations and Assumptions

The introduction fixes the boundaries of the study. Scope states what is included (subjects, classes, schools, period). Delimitations are boundaries the researcher deliberately chooses (only government schools, only class IX, only one district). Limitations are weaknesses beyond his control that may affect the findings (short duration, dependence on school timetables), stated honestly. Assumptions are things taken for granted (that tests were answered honestly, that the achievement test measures the taught content). Together these protect the study from unfair criticism and tell the reader exactly how far the conclusions may be trusted and generalised.

7. Operational Definitions of Terms

Finally, the introduction defines the key terms of the title and problem as they are used in this study. “Supervised daily practice” might be defined as ten teacher-checked sums done daily in a fixed period for eight weeks; “achievement” as the score on the researcher-made mathematics test. Operational definitions remove ambiguity, guide the construction of tools and allow other researchers to replicate the study. Terms with ordinary, undisputed meanings need not be defined; only the study’s working terms require it.

Qualities of a Good Introduction

A good introduction in a proposal is clear, logically funnel-shaped from background to problem, and economical: it contains everything needed to justify and delimit the study and nothing irrelevant. It is written in a convincing but honest tone, supported by a few authoritative facts

and references, and it ends leaving the reader with three certainties — the problem is real, the study is needed, and the plan that follows can answer it. Since examiners and committees often judge a proposal mainly by its introduction, the researcher should revise it repeatedly, usually writing it again after the rest of the proposal is complete.

Conclusion

To conclude, a research proposal is the advance blueprint of a study — a written plan stating the problem, its importance, the method, the schedule and the cost — prepared to win approval, to guide the work and to catch errors at the planning stage. Its introduction component lays the foundation of the whole proposal: background, statement of the problem, objectives, questions or hypotheses, significance, scope with delimitations, limitations and assumptions, and operational definitions. A carefully written introduction does not merely open the proposal; it justifies the study's existence. The researcher who masters it has completed the most difficult intellectual step of the entire research — deciding exactly what to study, and why.

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Question 3: Direct and Indirect Sources of Information in Research (20 Marks)

Q. No. 3: Differentiate between direct and indirect sources of information we use in the research process. Support your answer with examples. (20)

Introduction

Research lives on information. Before and during a study, the researcher draws information from many sources: he observes classrooms, questions teachers, consults records, and reads what earlier investigators have written. These sources are commonly divided into direct (primary) and indirect (secondary) sources. A direct source gives first-hand information, obtained by the researcher himself from the original place, person or document; an indirect source gives second-hand information — material that has already been collected, reported or interpreted by someone else. Knowing the difference is not an academic nicety: the reliability, cost, time and even the conclusions of a study depend on which sources are used and how carefully indirect material is verified. This answer defines both types, lists examples of each, presents a point-by-point differentiation in discussion and a table, and concludes with guidance on using the two together.

Direct (Primary) Sources of Information

Direct sources are those from which the researcher obtains information at first hand, directly from the original source, for the specific purposes of his own study. The defining marks are originality and immediacy: the information has not passed through another reporter's selection or interpretation. The chief direct sources in educational research are: (1) Observation — the researcher watches teaching, behaviour or conditions himself and records them. (2) Interview

— he asks questions face to face (or by call) and obtains answers from the very persons concerned. (3) Questionnaire administered for the study — responses given by the respondents themselves directly to the researcher. (4) Tests and measurements — achievement, aptitude or attitude instruments administered by the researcher, whose scores are his own first-hand data. (5) Experiments — data generated by the researcher's own manipulation of a treatment. (6) Original records and documents examined at first hand — admission registers, attendance registers, result sheets and minutes inspected by the researcher himself in the school office. (7) Personal participation and field notes — what the practitioner records in his own diary during action research. Example: a researcher studying causes of absenteeism who visits the school, observes morning attendance, interviews absent students' parents and examines the attendance register himself is using direct sources throughout; the evidence is fresh, fitted to his exact questions, and he knows the conditions under which it was obtained.

Indirect (Secondary) Sources of Information

Indirect sources provide information at second hand: material originally collected or reported by others, which the researcher uses for his own purposes. The information reaches him after passing through at least one intermediary who collected, selected, summarised or interpreted it, and it was usually produced for some purpose other than his study. Chief indirect sources are: (1) Published research reports, theses and journal articles — the findings of earlier studies, which form the review of literature. (2) Books and textbooks summarising knowledge in a field. (3) Official statistics and published reports — census figures, the Pakistan Education Statistics, examination board summaries and annual reports of education departments. (4) Newspapers, magazines and broadcasts reporting educational events. (5) Encyclopaedias, dictionaries,

abstracts, indexes and bibliographies, which do not give original data but point to and summarise other works. (6) Second-hand accounts — for example, a head teacher's published article describing an experiment conducted by someone else, or a review article summarising ten studies of homework. Example: the same researcher on absenteeism reads three published studies of dropout in other districts, takes district enrolment figures from official statistics and consults a journal article reviewing causes of absenteeism; all this information is indirect — valuable, but gathered by others, for other populations and purposes, and it must be checked for accuracy, date and relevance before use.

Differentiation Between Direct and Indirect Sources

The two types differ on several clear points. In origin, direct information is created by the present study, while indirect information already exists before the study begins. In contact, the direct source connects the researcher with the phenomenon itself; the indirect source connects him with another person's account of the phenomenon. In reliability, direct data can be checked by the researcher's own care in collection, whereas indirect data carry the additional risk of the original collector's errors, biases and outdated conditions, and the two can still serve different roles in one study. In fitness, direct data are tailor-made to the exact problem, population and definitions of the study, while indirect data were produced for other questions and may fit only approximately. In cost and time, direct collection is expensive and slow — travel, tools, fieldwork — whereas indirect material is comparatively quick and cheap to obtain. In quantity and scope, indirect sources can cover whole countries and many years, far beyond what one researcher could collect himself; direct data are limited to his sample and period. Finally, in function, indirect sources dominate the early stages of research — defining the

problem, reviewing literature, framing hypotheses — while direct sources dominate the data-collection stage, where the study's own evidence is produced. A thesis therefore normally contains both: its literature review is built on indirect sources and its findings on direct ones.

Table 1: Direct and indirect sources of information compared

Basis	Direct (primary) sources	Indirect (secondary) sources
Origin	Produced first-hand by the present researcher	Already produced and reported by others
Contact with phenomenon	Direct: researcher faces the person / event / record	Mediated: through another's report or summary
Examples	Observation, interview, own questionnaire, own tests, experiment, registers inspected personally	Published studies, books, official statistics, newspapers, abstracts, review articles
Fitness to the problem	Exactly fitted to the study's questions and definitions	Produced for other purposes; approximate fit
Reliability	Controlled by the researcher's own care	Depends on the original collector; needs verification
Cost and time	High cost, more time (fieldwork)	Low cost, quick to obtain
Scope possible	Limited to sample and period studied	Very wide: whole countries, long periods
Main stage of use	Data collection and findings	Problem selection, literature review, hypotheses

Precautions in Using Indirect Sources

Because indirect information passes through other hands, the researcher must use it critically. He should prefer the original report over a summary of a summary; check the authority and competence of the source; note the date, because conditions and figures change; compare several sources on the same point; and distinguish fact from the original writer's opinion.

Where possible, important indirect figures should be verified against a direct check — for example, published enrolment of a school can be confirmed from its own register during fieldwork. Proper citation of indirect sources is also an ethical duty, acknowledging the work of earlier researchers and allowing readers to trace the evidence.

Conclusion

To conclude, direct sources give first-hand, tailor made and researcher-controlled information — observation, interviews, the study's own questionnaires, tests, experiments and personally inspected records — at a high cost of time and effort. Indirect sources give second-hand information — published studies, books, official statistics, press reports and abstracts — quickly, cheaply and over a wide scope, but with risks of error, bias and outdatedness that demand critical verification. The competent researcher does not choose between them but combines them: indirect sources to discover and define the problem and to learn what is already known, direct sources to produce the fresh evidence on which his own conclusions rest.

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Question 4: Significance of a Research Tool; Notes on Test and Questionnaire (20 Marks)

Q. No. 4: Describe the significance of a research tool. Write brief notes on "test" and "questionnaire" as tools of research. (20)

Introduction

Research is only as good as the evidence it rests on, and evidence is gathered through tools. A research tool (instrument) is any device or technique by which the researcher collects data: tests, questionnaires, interviews, observation schedules, rating scales, checklists and inventories. Just as a carpenter cannot build sound furniture with blunt tools, a researcher cannot reach sound conclusions with defective instruments; errors made at the tool stage cannot be repaired by any amount of clever statistics later. This answer first explains the significance of a research tool and the qualities a good tool must possess, and then gives a focused note on two of the most used tools in educational research — the test and the questionnaire — describing the meaning, types, uses, advantages and limitations of each, and ending with a brief comparison.

Significance of a Research Tool

The significance of the research tool can be understood from several angles. First, the tool is the bridge between the research problem and its answer: objectives and hypotheses remain mere intentions until a tool converts them into observable, recordable data. Secondly, the quality of the tool decides the quality of the whole study: a valid and reliable tool produces trustworthy data, while a careless tool produces precise-looking numbers that mean nothing, misleading everyone who uses the findings. Thirdly, a proper tool brings objectivity: the same

questions, tasks or observations are presented to all respondents in the same way, so results do not depend on the mood or bias of the collector. Fourthly, tools make quantification and comparison possible — scores, frequencies and ratings that can be analysed statistically, compared between groups and over time. Fifthly, standardised tools allow replication and accumulation of knowledge, because other researchers can use the same instrument in other places and compare results. Finally, a well-chosen tool saves time, cost and effort by collecting exactly the information the objectives require — no more and no less. For these reasons researchers devote great care to selecting or constructing tools, trying them out in pilot studies and reporting their qualities honestly.

Qualities of a Good Research Tool

- Validity: the tool measures what it claims to measure — an achievement test must test the taught content, not general cleverness or language luck.
- Reliability: the tool gives consistent results — if applied again under similar conditions, it yields nearly the same scores.
- Objectivity: scoring and interpretation do not depend on the personal judgement or bias of the examiner.
- Usability / practicability: the tool is economical in time, cost and effort, easy to administer and score, and suited to the age, language and level of the respondents.
- Comprehensiveness and precision: the tool covers the needed content adequately, with clear instructions and unambiguous items.

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Note 1: The Test as a Tool of Research

A test is a standardised set of tasks, questions or stimuli presented to an individual or group, whose responses are scored according to fixed rules to measure some ability, achievement, trait or characteristic. Tests are the most objective and quantitative of research tools, and in education they are used to measure learning outcomes, compare methods, select students and diagnose difficulties. Tests are classified in several ways. By purpose: achievement tests measure what has been learned (teacher-made classroom tests and standardised achievement batteries); aptitude tests estimate capacity for future learning; intelligence tests measure general mental ability; personality tests and inventories describe traits and adjustment; diagnostic tests locate specific weaknesses, for example in reading or arithmetic. By administration: individual and group tests; by response mode: objective tests (multiple choice, true–false, matching, short answer) scored by a key, and essay tests judged by criteria; by standardisation: standardised tests, prepared by experts with norms, versus teacher-made tests for local use. A good test demands careful construction: a plan or blueprint of content and objectives, well-written items, try-out and item analysis, and evidence of validity and reliability. Advantages of tests include objectivity, comparability, economy for large groups and precise measurement of the outcome of an experiment — which is why the achievement test is the standard measuring tool of experimental research. Limitations: tests measure only what can be elicited in test form; they may induce anxiety; poorly made tests reward memorisation and coaching; and traits like creativity and character cannot be fully captured by a test score alone, so tests should be supplemented by other tools.

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Note 2: The Questionnaire as a Tool of Research

A questionnaire is a written set of questions on a topic, given to respondents who fill in the answers themselves. It is the most widely used tool of descriptive and survey research, because it can collect information about facts, opinions, attitudes, practices and background from a large number of people scattered over a wide area at low cost. Types of questionnaires include: the structured (closed-form) questionnaire, offering fixed choices — yes/no, multiple choice, or rating scales such as strongly agree to strongly disagree — which is easy to answer, score and analyse; the unstructured (open-form) questionnaire, inviting free written answers, which yields rich detail but is hard to classify; and the pictorial questionnaire for children or respondents with limited literacy. Construction of a good questionnaire is a skilled task: questions must flow from the objectives; each question must ask one thing only, in simple, unambiguous language suited to the respondents; leading, embarrassing and double-barrelled questions are avoided; the order moves from easy and general to specific; instructions and a covering letter explain the purpose and assure confidentiality; and the draft is pilot-tested on a small group and revised before final use, with follow-up reminders to raise the response rate. Advantages: economy, wide coverage, uniformity of questions, freedom for the respondent to answer thoughtfully and without the pressure of an interviewer, and easy quantification of closed responses. Limitations: it can be used only with literate respondents; return rates are often low and non-respondents may differ from respondents, biasing results; answers may be superficial, misunderstood or socially desirable rather than truthful; and the researcher cannot probe or clarify as in an interview. These limitations are reduced — not removed — by careful construction, piloting and persistent follow-up.

Table 1: Test and questionnaire compared as research tools

Basis	Test	Questionnaire
What it measures	Ability, achievement, aptitude, traits through performance	Facts, opinions, attitudes, practices through self-report
Who supplies the standard	Fixed tasks with a scoring key / norms	Questions answered by respondent in own hand (or online)
Respondent requirement	Must perform the tasks; suits even young learners with oral / pictorial forms	Requires literacy (except pictorial forms)
Typical research use	Experimental and evaluative studies measuring outcomes	Descriptive surveys of large, scattered populations
Strength	Objectivity and precise, comparable scores	Economy, wide coverage, uniformity
Main weakness	Cannot capture everything (creativity, character); test anxiety	Low returns; superficial or untrue answers possible

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Conclusion

To conclude, the research tool is significant because it is the sole bridge between the problem and the evidence: its validity, reliability, objectivity and usability determine whether the conclusions of the whole study can be trusted. The test measures performance — achievement, aptitude and traits — objectively and precisely, and is indispensable wherever outcomes must be measured and compared. The questionnaire collects self-reported facts, opinions and attitudes from large numbers cheaply and uniformly, and is the workhorse of survey research. The skilled researcher chooses the tool that fits his objectives, constructs or selects it with care, pilot-tests it, and reports its qualities — knowing that no analysis, however sophisticated, can rescue data gathered with a defective tool.

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Question 5: The Research Report and the Main Divisions of Research (20 Marks)

Q. No. 5: Describe a research report in your own words, and also explain the main divisions of research by giving examples. (20)

Introduction

Research is not complete when the last table is calculated; it is complete only when its findings are communicated to others in a clear, complete and honest report. Until then, the work benefits no one — not teachers, not policy makers, not future researchers — and it cannot be judged, used or built upon. This answer first describes a research report in my own words: its meaning, purposes and qualities. It then explains the main divisions of the research report, the standard organisation into preliminary, main-body and supplementary parts with their contents. Finally, because the question also speaks of the main divisions of research itself, it briefly explains the principal divisions or types into which research is divided — basic, applied and action; historical, descriptive and experimental; qualitative and quantitative — with an educational example of each, so that both readings of the question are fully answered.

What is a Research Report? (In My Own Words)

In my own words, a research report is the complete written account of a study that has been carried out. It tells the reader, in an organised and verifiable way, what problem was investigated and why, what was already known about it, exactly how the study was conducted, what was found, and what the findings mean. It is both the record and the proof of the research: a record, because it preserves the problem, the procedure and the results for anyone who needs them later; and a proof, because by describing the method honestly it allows

experts to judge whether the conclusions deserve to be believed, and allows other researchers to repeat (replicate) the study if they wish. Its purposes are therefore practical as well as academic: to communicate findings to the scholarly community and to decision makers; to add a verified piece to the body of knowledge; to enable utilisation of results in classrooms and policy; to serve as a reference and starting point for further studies; and to fulfil the formal requirement of a degree, project or funded scheme. A good report is clear, accurate, complete, objective and economical: it reports unfavourable results as faithfully as favourable ones, separates fact from interpretation, uses simple precise language with tables and figures where they help, and follows a recognised format so that any reader can find any part of it quickly.

Main Divisions of the Research Report

A research report is conventionally organised in three main divisions. The first is the preliminary (front) section. It contains the title page (title of the study, researcher, institution, degree or purpose, date), the approval or certificate page where required, acknowledgements, the table of contents, and the lists of tables and figures. Its function is identification and navigation: it tells at once what the report is and helps the reader locate every part. The second and largest division is the main body (text) of the report, normally arranged in chapters. Chapter One, the introduction, presents the background, statement of the problem, objectives, questions or hypotheses, significance, delimitations and definitions of terms. Chapter Two reviews the related literature and, where relevant, the theoretical framework, ending in the gap the study fills. Chapter Three describes the methodology in full — research design, population and sample, tools and their validity and reliability, procedure of data collection and plan of analysis — in enough detail for replication. Chapter Four presents and analyses the results, table by

table and figure by figure, strictly as findings. Chapter Five discusses and interprets the findings in relation to the literature, and presents the summary, conclusions and recommendations, together with suggestions for further research. The third division is the reference or supplementary section: the bibliography or list of references actually cited, prepared in a recognised style, and the appendices, which carry material too bulky for the body — copies of the questionnaire or test, raw data tables, letters of permission and other supporting documents. This three-fold division — preliminaries, body, supplementary material — is the skeleton of theses, dissertations and formal project reports alike; journal articles compress the same logic into abstract, introduction, method, results, discussion and references.

Table 1: Main divisions of a research report

Division	Contents	Function
1. Preliminary section	Title page, certificate, acknowledgements, table of contents, lists of tables and figures	Identifies the report; guides the reader
2. Main body — Ch. 1 Introduction	Background, problem, objectives, hypotheses, significance, definitions	States what was studied and why
2. Main body — Ch. 2 Literature review	Previous studies, theory, research gap	Places the study in existing knowledge
2. Main body — Ch. 3 Methodology	Design, population, sample, tools, procedure, analysis plan	Enables judgement and replication
2. Main body — Ch. 4 Results	Presentation and analysis of data in tables / figures	Reports what was found
2. Main body — Ch. 5 Discussion & conclusions	Interpretation, summary, conclusions, recommendations	Explains meaning and uses of findings
3. Supplementary section	References / bibliography; appendices (tools, raw data, letters)	Documents sources and supporting material

Main Divisions of Research (With Examples)

Research itself is divided in several standard ways, and a report normally declares where the study stands in these divisions. By purpose, research is divided into basic (fundamental) research, which seeks new knowledge and theory without immediate practical aim — example: a study of how children's memory develops with age; applied research, which uses knowledge to solve a practical problem of wider scope — example: testing a new reading programme in forty schools of a province; and action research, in which a practitioner improves his own situation — example: a teacher curing spelling errors in her own class through plan–act–observe–reflect cycles. By method or approach to the problem, research is divided into historical research, which reconstructs the past from records and relics — example: a study of the development of girls' education in the region since 1947; descriptive research, which describes present conditions, attitudes and relationships — example: a survey of facilities and teachers' qualifications in the primary schools of a district; and experimental research, which tests cause and effect under control — example: comparing activity-based and lecture methods with random groups and pre- and post-tests. By nature of data, research is quantitative, expressing findings in numbers and statistics — example: a correlational study of study habits and marks; or qualitative, describing experiences and meanings in words — example: an in-depth case study of one innovative school and its culture; many modern studies are mixed, using both. These divisions are not watertight compartments; they are coordinates that locate a study, and naming them helps the reader know what kind of evidence to expect and how far the conclusions extend.

Conclusion

To conclude, a research report is the complete, honest and organised written account of a finished study — problem, background, method, findings, interpretation and recommendations — through which research enters the common stock of knowledge and becomes usable by others. Its main divisions are the preliminary section, the main body of chapters (introduction, literature review, methodology, results, and discussion with conclusions and recommendations), and the supplementary section of references and appendices. Research itself is likewise divided — by purpose into basic, applied and action research; by method into historical, descriptive and experimental research; and by data into quantitative, qualitative and mixed research — each type with its own questions and examples. The researcher who understands both the divisions of the report and the divisions of research can plan, execute and communicate a study that others can trust, use and extend.

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