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Содержит аутентичные англоязычные тексты по методологии научного исследования и разработанный на их основе комплекс заданий, ориентированных на взаимосвязанное формирование умений иноязычного чтения, письма и говорения в контексте научно-познавательной деятельности.

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Н. Никульшина, О. Гливенкова

АНГЛИЙСКИЙ ЯЗЫК ДЛЯ ИССЛЕДОВАТЕЛЕЙ

Утверждено Учёным советом университета
в качестве учебного пособия

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FOREWORD

This book is intended for undergraduates and postgraduates studying English for research purposes.

Lack of common research areas among English language learners means missing situation where everyone is an 'expert' and where some informed discussion about the subject can take place. As a way of creating a number of English situations where all postgraduates could approach a topic as equals, we decided to look for the subject that meets the requirements of various interests in the group. This turned out to be the methodology of research which provides postgraduates with the knowledge, understanding and necessary skills to undertake a research project in a foreign language.

The succession of research stages inevitably finds its manifestation in primary genres structures of research discourse such as an article, monograph, dissertation and can be used as a basis for syllabus specifications.

The topic-driven syllabus consists of six units:

1. The nature of research.
2. The research process.
3. Choosing and specifying the research topic.
4. Critically reviewing the literature.
5. Deciding on the research approach and choosing a research strategy.
6. Collecting and analyzing data.

Reading materials are taken from authentic up-to-date sources:

Walliman, N. (2001). *Your research Project*: *A Step by Step Guide for the First-Time Researcher*. London: Sage.

Robson, C. (2002). *Real World Research.* Oxford: Blackwell.

Saunders, M., Lewis, Ph. and Thornhill A. (2003). *Research Methods for Business Students*. Harlow: Financial Times Prentice Hall.

English for Researchers is designed to promote developing all four skills with special emphasis on strategies of communicative reading and general academic vocabulary acquisition.

Each unit includes 'Focus on Information' with the aim to introduce relevant information and to create solid foundation for critical thinking and discussion; "Focus on Language" designed for developing lexical and grammatical skills; "Practice activities" for providing practical application of English and further development of cognitive learning strategies; 'Case studies' with associated discussion questions to ensure that you have understood the material. Each unit contains self-check questions and glossary.

We have tried to make the content of the book as interesting as possible to help postgraduates achieve real confidence in mastering English language for science.

Nadezhda Nikulshina
Olga Glivenkova

UNIT 1

THE NATURE OF RESEARCH

The aims of this unit:

- to make you think about the true nature of research;
- to analyse the concept of scientific research;
- to reflect upon a variety of research projects according to their purpose and context in which they are undertaken;
- to enable you to place your research project on a basic-applied research continuum;
- to provide practice in writing formal definitions.

FOCUS ON INFORMATION

1. Skim the text about the nature of research. Find an appropriate heading for each paragraph.

a. academic definition of research
b. everyday use of the term 'research'
c. basic characteristics of research
d. basic and applied research
e. incorrect use of the term 'research'

1. When listening to the radio, watching the television or reading a daily newspaper it is difficult to avoid the term 'research'. The results of 'research' are all around us. A debate about the findings of a recent poll of people's opinions inevitably includes a discussion of 'research', normally referring to the way in which the data were collected. Politicians often justify their policy decisions on the basis of 'research'. Documentary programmes tell us about 'research findings', and ad-

vertisers may highlight the 'results of research' to encourage you to buy a particular product or brand. However, we believe that what these examples really emphasize is the wide range of meanings given to the term 'research' in everyday speech.

2. Many of these everyday uses of the term 'research' are not research in the true meaning of the word. The ways in which the term is used wrongly are:

- just collecting facts or information with no clear purpose;
- reordering facts or information without interpretation;
- as a term to get your product or idea noticed and respected.

The first of these highlights the fact that, although research often involves the collection of information, it is more than just reading a few books or articles, talking to a few people or asking people questions. While collecting data may be part of the research process, if it is not undertaken in a systematic way, on its own and in particular with a clear purpose, it will not be seen as research. The second of these is commonplace in many reports. Data are collected, perhaps from a variety of different sources, and then assembled in a single document with the sources of these data listed. However, there is no interpretation of the data collected. Again, while the assembly of data from a variety of sources may be part of the process of research, without interpretation it is not research. Finally, the term 'research' can be used to get an idea or product noticed by people and to suggest that people should have confidence in it. In such instances, when you ask for details of the research process, these are either unclear or not forthcoming.

3. Based upon this brief discussion we can already see that research has a number of characteristics:

- data are collected systematically;
- data are interpreted systematically;
- there is a clear purpose: to find things out.

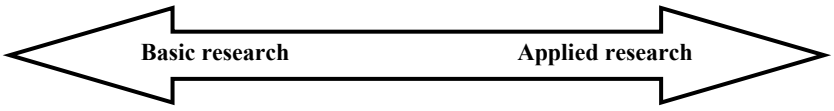
4. We can therefore define *research* as something that people undertake in order to find out things in a systematic way, thereby increasing their knowledge. Two phrases are important in this definition: 'systematic research' and 'to find out things'. 'Systematic' suggests that research is based on logical relationships and not just beliefs. As part of this, your research will involve an explanation of the methods used to collect the data, will argue why the results obtained are meaningful, and will explain any limitations that are associated with them. 'To find out things' suggests there are a multiplicity of possible purposes for your research. These may include describing, explaining, understanding, criticising and analysing. However, it also suggests that you have a clear purpose or set of 'things' that you want to find out, such as the answer to a question or number of questions.

5. Despite the variety of purposes and contexts of research, all research projects can be placed on a continuum (Fig. 1.1). At one extreme of the continuum is research that is undertaken purely to understand processes and outcomes. Such research is conducted predominantly in universities as a result of an academic agenda. Its key consumer is the academic community, with relevantly little attention being given to its practical applications. This is often termed *basic, fundamental or pure* research. At the other end of the continuum is the research which is of direct and immediate relevance to practitioners that addresses issues they see as important and is presented in ways they can understand and act upon. This is termed *applied* research.

2. Scan the text and write the number of the paragraph where you can find the following information. Do it as quickly as possible.

____ collecting facts without purpose
____ fundamental characteristics of research
____ purposes of research
____ pure research
____ meanings given to the term 'research' in everyday life
____ applied research
____ systematic study

3. Examine Figure 1.1. What are the key differences between basic and applied research?



Purpose: • to expand knowledge of processes	***Purpose***: • to improve understanding of a particular problem
Findings • universal principles relating to the process and its relationship to outcomes	***Findings*** • solution to problem, new knowledge limited to a problem
Significance • of theoretical relevance and value to society in general	**Significance** • of practical relevance and value to particular organisations

Context: • undertaken by people based in universities • choice of topic and objectives determined by the researcher • flexible time scale	***Context***: • undertaken by people based in a variety of settings including organisations and universities • objectives negotiated with originator • tight time scale

Figure 1.1. Basic and applied research

4. If you know the purpose of the research project, can you guess what kind of research it is? Complete the table with the answers below.

The purpose of the research project is	kind of research
1. to produce an accurate representation of persons, events or situations	
2. to study a situation or a problem in order to explain the relationships between variables	
3. to seek new insights into phenomena, to ask questions, and to assess the phenomena in a new light	
4. to compare two or more different variables to determine if any predictable relationships exist among them	
5. to conduct empirical tests while identifying and controlling as many factors as possible that may affect the outcome of the study	
The purpose of the research project is	**kind of research**
6. to explain or predict phenomena observed in the laboratory or in nature	
7. to carry out the empirical investigation of a particular contemporary phenomenon within its real-life context, using multiple sources of evidence	

a. exploratory research; **b.** correlational research; **c.** case study; **d.** controlled scientific experiment; **e.** descriptive research; **f.** computer-generated modelling; **g.** explanatory research.

5. Match terms in column A with their definitions in column B.

A	B
1) research n.	a) clear, specific statements that identify what the researcher wishes to accomplish as a result of doing research
2) researcher	b) the appropriateness of the researcher's behaviour in relation to the rights of those who become the subject of a research project, or who are affected by it
3) research v.	c) to make a detailed systematic study of something in order to discover new facts
4) research and development	d) general plan of how the researcher will go about answering the research questions
5) research strategy	e) the systematic collection and interpretation of information with a clear purpose to find things out
6) research idea	f) an unsettled question; a matter requiring solution
7) research objectives	g) the work that companies do when they are developing new products, services, or methods. It is often simply called R and D.

8) research ethics	h) initial idea that may be worked out into a research project
9) research problem	i) someone whose job is to do scientific research

FOCUS ON LANGUAGE

6. Find Russian equivalents of the English words used in the text.

1) poll n.	a) неизбежно
2) avoid v.	b) подчеркивать, выделять
3) inevitably adv.	c) поощрять, подстрекать, ободрять
4) refer to v.	d) опрос, голосование, выборы
5) justify v.	e) спорить, убеждать, утверждать
6) highlight v.	f) предпринимать
7) encourage v.	g) относиться, приписывать, ссылаться
8) argue v.	h) значимость, существенность, важность
9) clear purpose n.	i) узнать, выяснить, докопаться до истины
10) commonplace n.	j) план мероприятий, программа
11) confidence n.	k) избегать
12) forthcoming a.	l) оправдывать, объяснять, подтверждать
13) undertake v.	m) преимущественно, особенно
14) find out v.	n) общее место
15) beliefs n.	o) ясная, отчетливая цель
16) explanation n.	p) многообразие, множественность
17) multiplicity n.	q) объяснение
18) agenda n.	r) мнения
19) relevance n.	s) открытый, откровенный
20) predominantly adv.	t) доверие

7. Look through the text again and find the words which mean the same. The paragraph numbers are given in brackets.

1) a discussion in which people or groups state different opinions about a subject (1)

2) an occasion when a lot of people are asked their opinions about something, usually by a company paid by a political party, television program etc (1)

3) information that you discover or opinions that you form after doing research (1)

4) the detailed study of something in order to discover new facts, especially in a university or scientific institution (2)

5) an explanation of the meaning or importance of something; a way of performing a piece of music, a part in a play etc that shows how you understand it and feel about it (2)

6) the process of gathering something (2)

7) done according to a careful plan and in a thorough way (4)

8) to discover a fact or piece of information (4)

9) a series of events, changes, features etc that all have a particular quality to different degrees (5).

8. Translate the following sentences into Russian paying attention to the use of the word ′research′.

1. Xerox Corporation funded **the initial research on** personal computers in their Palo Alto laboratory in California.

2. When the collaboration between IBM and **Digital Research** failed, IBM turned to Bill Gates, then 25 years old, to write their operating system.

3. If you are **applying for research funding**, you will need to put a great deal of time into the preparation of research proposal.

4. Your **research philosophy** depends on the way that you think about the development of knowledge.

5. If you are **conducting exploratory research** you must be willing to change your direction as a result of new data that appears and new insights that occur to you.

6. We hold that **research into** the functions of the brain will yield revolutionary data regarding the nature of the human mind.

7. In **current research in** theoretical computer science, machines are being developed which automatically prove theorems.

8. A demand for reliable information has **stimulated research into** herbs and their effects.

9. The educational area of specialization has its own theoretical orientation and **research tradition**.

9. Analyze the following word combinations and use them to make sentences of your own.

carry out complete do pursue undertake be engaged in rely on refer to give priority to	research	
complex contemporary field detailed empirical experimental independent applied pure	research	
research	agenda Council grant team methods outcome paper paradigm	
research	in (logic/ symbolic interactionism) into (the causes/effects) on (the topic/ phenomena)	

10. Identify the nouns, adjectives, adverbs and verbs in the following groups of words. Use the appropriate ones in the sentences below. Choose the correct form of the word.

A. a. research; **b.** to research; **c.** researcher

1. There is clearly a need for further _____ on this topic.
2. A software package entitled ”NN” integrates data that have been compiled by independent _____ .
3.They have been _____the effects of the drug on mice.
4. This book by itself does not provide all the tools to become a creative _____ in mathematics.
5. The subject has not been fully _____before.
6. A few _____ challenge this assessment, offering intriguing alternative models.
7. She teaches a lot of classes and doesn't have much time for her own _____ .
8. This book is of special interest to those working, _____ and teaching computing.

B. a. system; **b.** systematic; **c.** systematically; **d.** systematize; **e.** systematization; **f.** unsystematically.

1. Rhetoric provides a framework in which these matters may be _____ investigated.
2. They are introducing a very sophisticated _____ for delivering information.
3. The positive side of _____ methodologies is that they can heighten a researcher’s appreciation of the complexities of the world.
4. We can _____ this concept by classifying it into a small number of distinct categories.
5. Formalization is an outgrowth of the broader goals of scientific _____ .
6. Satellite communication _____ can potentially alter the industrial paradigm in developing countries.
7. The collection has been _____ updated.

11. The words in bold type in the following sentence can be used to form other words with different grammatical functions. Fill in the numbered spaces in the table below. The first one has been done for you. Then complete the sentences below it.

Because both scientific ethics and copyright **law** are of **fundamental** importance, every **scientist** must be acutely **sensitive** to them.

Concrete noun	Abstract noun	Verb	"Positive" adjective	"Negative" adjective
scientist	1) science		2)	3)
	4)	5)	sensitive	6)
7)	8)		fundamental	9)
10)	law		11)	12)

1. The normal _____ advice is to be as clear and logical as possible.	SCIENCE
2. The machine _____ when the engine gets too hot, and shuts itself off.	SENSITIVE
3. Someone who believes that original religious and political laws should be followed very strictly and not be changed is called a _____ .	FUNDAMENTAL
4. The jury returned a verdict of _____ killing.	LAW

PRACTICE ACTIVITIES

DEFINITIONS

When we present new concepts, or explain new technology, or describe a new way of looking at an old idea, we need to define these things so that it is perfectly clear what we mean. The kind of definitions we are usually concerned with in academic writing is a formal definition.

A formal definition is the well-known equation T = C + D, where:
T is the term being defined,
C is the class of which the term is a member (subset),
D is the sum of the differences given to distinguish this term from all other members of the class.

A definition of '*a scientist'* is a good example of a formal definition:
"A scientist is a person whose job is to do theoretical or applied research".
Another example of a formal definition is a definition of '*an encyclopaedia*': "An encyclopaedia is a book which gives information on subjects in alphabetical order".

Note: *Who* is used for persons, *which* is used for inanimate objects and animals, *that* is used for both persons and objects, *where* is used for places.

12. Join the sentences on the left below with the correct ones from those on the right. Use an appropriate relative pronoun or adverb to create a relative clause. E.g.: A key word is a basic term. It represents the main feature or idea of something. A key word is a basic term **that** represents the main feature or idea of something.

1. **A moderator** is a person	a) it can be used to generate and refine research ideas. It is best undertaken with a group of people.
2. **Brainstorming** is a technique	b) it contains much of the knowledge used by experts in a specific field and is designed to assist non-experts in problem solving.
3. **An internal researcher** is a person	c) he conducts research within an organization for which he works.
4. **An expert system** is a computer-based system	d) it shows how research should be undertaken, including theoretical and philosophical assumptions upon which research is based.
5. **An explanatory study** is research	e) there students study for degrees and academic research is done.
6. **Methodology** is a theory	f) it allows the presenter to design overhead slides using texts, pictures, photographs etc., which lend a professional appearance.

7. **PowerPoint** is a Microsoft computer package	g) it is undertaken for Master or Doctor of Philosophy (PhD) degrees, written for an academic audience.
8. **A thesis** is a research project	h) he is in charge of a discussion, meeting etc between people with different opinions.
9. **University** is an educational institution	i) it focuses on studying a situation or a problem in order to explain the relationships between variables

13. It is possible for academic subjects to be defined more specifically. Look at the following example:

Psychology may be defined as the branch of biological science which studies the phenomena of conscious life and behaviour.

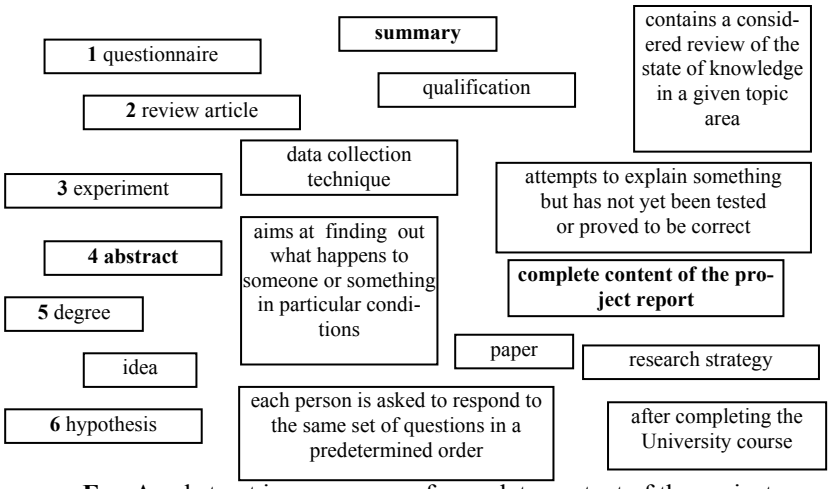
Write out definitions of the following subjects in the same way as above.

Chemistry – science – deals with composition and behaviour of substances.

Econometrics – economics – applies mathematical and statistical techniques to economic problems.

Write out a definition of your subject in a similar way to the above.

14. Mach up the jigsaw pieces to complete the definitions. One has been done for you.



E.g. An abstract is a summary of complete content of the project report.

SELF-CHECK QUESTIONS

1. What are the constitutive features of research?
2. What testifies to incorrect use of the term 'research'?
3. What does 'systematic' in the definition of research imply?
4. What research purposes can be set?
5. What is pure research aimed at?
6. What does applied research result in?
7. How can a variety of research be explained?
8. What kinds of research are widely used?
9. What does research ethics imply?
10. What is meant by a research strategy?
11. What formula is a formal definition based on?

GLOSSARY

acutely adv.	остро, резко
agenda n.	план, программа, повестка дня
applied a.	прикладной
appreciation n.	оценка, понимание, восприятие, признательность
assessment n.	оценка
attempt n.	попытка
case study n.	метод изучения конкретных ситуаций
challenge v.	оспаривать, ставить под сомнение
complexity n.	сложность, трудность
compile v.	собирать, компилировать, составлять
complete v.	завершать, закачивать, заполнять (анкету)
considered a.	продуманный, обоснованный
constitutive a.	образующий, конструктивный
distinct a.	отдельный, отчетливый, особый
flexible a.	гибкий

heighten v.	повышать, усиливать
hold v.	придерживаться
imply v.	подразумевать, предполагать
insight n.	понимание, интуиция, проникновение
issue n.	спорный вопрос, проблема
moderator n.	посредник, ведущий в дискуссии, руководитель секции
order n.	порядок
outcome n.	результат
outgrowth n.	результат, следствие
predetermined a.	предопределенный, заранее установленный
pursue v.	преследовать, следовать, выполнять
questionnaire n.	анкета, вопросник
review n.	обзор, рецензия
sophisticated a.	сложный
testify v.	свидетельствовать, подтверждать
thesis n.	диссертация
tight a.	сжатый, плотный
time scale n.	масштаб времени
undertake v.	предпринимать
unscientific a.	антинаучный
updated a.	усовершенствованный
variety n.	разнообразие, разновидность
yield v.	давать в результате

UNIT 2

THE RESEARCH PROCESS

The aims of this unit:

- to make you think about the stages you will need to complete as part of your research process;
- to reflect upon the correlation between the object and the subject, the goal and the objectives of research;
- to analyse the concept of a research hypothesis;
- to practise in formulating basic stages of your research.

FOCUS ON INFORMATION

1. Scan the text about the research process and write the number of the section (1 – 8) where you can find the following information. Do it as quickly as possible.

a. how to prove that your problem is topical
b. what are stages of research
c. how to describe the goal and set the tasks of your research
d. what is a hypothesis
e. how to evaluate your research
f. how to formulate the hypothesis
g. how to draw conclusions
h. how to specify the object and the subject of research

1. Most research textbooks represent research as a multi-stage process that you must follow in order to undertake and complete your research project. The precise number of stages varies, but they usually include formulating and clarifying a topic, critically reviewing the literature, choosing a strategy, collecting data, analyzing data and writing up. You may suggest that the research process is rational and straightforward. Unfortunately this is very rarely true, and the reality is considerably messier. While research is often depicted as moving through each of the stages outlined below, one after the other, this is unlikely to be the case. In reality you will probably revisit each stage more than once. Each time you revisit a stage you will need to reflect on the associated issues and refine your ideas.

Research is sometimes described using the hourglass model. The hourglass model starts with a broad spectrum for research, focusing in on the required information through the methodology of the project (like the neck of the hour-glass), then expands the research in the form of discussion and results.

The whole process of research can be divided into the following steps:

setting general area of research
defining the object of research
analyzing problem situation and stating a problem
specifying the subject of research
formulating a research goal
setting objectives
moving a hypothesis
developing research methods
collecting, describing, processing, interpreting research data
drawing conclusions, proving a hypothesis and resolving a research puzzle
determining application areas
writing research project

2. Any research starts with setting a research area which is determined by a number of objective and subjective factors. The objective determinants are such as topicality, novelty, urgency of the research. The subjective factors include scientific and professional interests of a researcher, his expertise, aptitudes, frame of mind, etc.

The object of the research is always broader than the subject chosen for research. It is a system of relations and properties of the phenomenon which exists objectively in theory and in practice and serves as a source of relevant information. The subject of the research is more concrete and includes only those relations and properties which are subject to direct investigation. It denotes what the author is planning to create in the process of studies.

A research problem is a puzzle that can't be explained with available knowledge and needs solution.

3. In the introduction to the research paper it is necessary to prove that the chosen problem is topical. A problem is topical if it meets at least three requirements:

– the problem has not been fully studied;
– much or something in the problem remains vague;
– lack of knowledge on the problem makes a loss to community.

To prove that the problem chosen for the research is topical the author gives a review of the previously published papers on the topic and a list of authors who were active in the studies of the problem. Then he/she mentions that though the problem has been given considerable attention, still something is not known and makes concrete what is still unknown on the topic. One also mentions what is still vague and needs elaboration. Then the author describes difficulties that spring up because the problem of his/her research has not been fully studied.

4. There is usually one major goal of research with objectives. The wish of the author to study a problem is expressed usually in one sentence which says that the goal of the research is to study the defined topic. Concrete objectives are further specified. The tasks of the research are usually the following:

– to clarify the nature and structure of the phenomenon being researched;
– to analyze the approaches to the research topic in literature;
– to describe aspects of the research topic by observation;
– to generate a model;
– to carry out an experiment;
– to analyze experimental results;
– to find out the ways of improving efficiency of the phenomenon under research.

The tasks (objectives) of research are set in order to plan the steps of the research. They may correspond to the order of the units and chapters of the research paper as a whole.

5. A hypothesis is a tentative assumption that proposes a possible explanation to some phenomenon or event. A hypothesis is said to be forceful if the assumption is not obvious from the very beginning of the research and really needs to be well proved. Researchers weighing up alternative hypotheses should take into consideration:

– testability;
– simplicity;
– scope – the apparent application of the hypothesis to multiple cases of phenomena;
– fruitfulness – the prospect that a hypothesis may explain further phenomena in the future;
– conservatism – the degree of "fit" with existing recognized knowledge-systems.

Hypotheses can be logical (arising from literature review), descriptive (predicting certain features in a phenomenon) and explanatory (anticipating plausible explanation of a puzzle).

Generally a hypothesis is used to make predictions that can be tested by observing the outcome of an experiment. If the outcome is inconsistent with the hypothesis, then the hypothesis is rejected. However, if the outcome is consistent with the hypothesis, the experiment is said to support the hypothesis.

6. How are hypotheses formulated?

– Bacterial growth may be affected by temperature.
– Ultra violet light may cause skin cancer.
– Temperature may cause leaves to change color.

All of these are examples of hypotheses because they use the tentative word “may”. However, their form is not quite correct. Using the word “may” does not suggest how you would go about proving it. If these statements had not been written carefully, they may not have even been hypotheses at all. For example, if we say “Trees will change color when it gets cold” we are making a prediction. Or if we write "Ultraviolet light causes skin cancer", we make a conclusion. One way to prevent making such easy mistakes is to formalize the form of the hypothesis.

Formalized hypothesis examples:

If *leaf color change* is related to temperature, ***then*** *exposing plants to low temperatures will result in changes in leaf color.*

If *skin cancer* is related to ultraviolet light, **then** *people with a high exposure to uv light will have a higher frequency of skin cancer*.

Notice that these statements contain the words, **if** and **then**. They are necessary in a formalized hypothesis.

Formalized hypotheses contain two variables. One is "independent" and the other is "dependent." The independent variable is the one the scientist controls and the dependent variable is the one the scientist observes and/or measures. In the statements above the dependent variable is printed in italics and the independent variable is underlined. The ultimate value of a formalized hypothesis is that it forces us to think about what results we should look for in an experiment.

7. The conclusions are the results of research findings. Usually the conclusions follow the order:
- conclusion on whether the research goal has been achieved;
- conclusion on whether the hypothesis has been proved or not;
- conclusion on whether each research task has been fulfilled;
- conclusions on what has been found in fulfilling every research task;
- conclusion on additional findings during the research;
- conclusion on further prospects to continue the research.

8. Evaluation of the research paper is done out of 100 %. Each item of evaluation is assessed out of 10 %. In all there are 10 items of evaluation:
- innovative subject;
- forceful hypothesis;
- concrete research goal;
- clear research tasks;
- adequate methods of research;
- detailed presentation of data;
- convincing interpretation;
- well grounded novel conclusions;
- complete bibliography list;
- perfect format.

If your research paper scores less than 65 % it is “non-pass” and will have to be improved. A satisfactory result is up to 80 %. Between 80 % and 95 % is a good grade. An excellent result is 95 % and over.

2. Restore the logical order of the stages of research:
- studying known facts about the object of research
- formulating and clarifying a topic
- defining the object of research
- choosing adequate methods
- moving a hypothesis
- setting objectives
- collecting experimental data
- stating a problem
- explaining the results obtained
- determining application areas
- quantitative and qualitative processing of data

3. Complete the sentences according to the text above.

1. Research as a multi-stage process that …
2. General research area is determined by …
3. The object of the research is …
4. The subject of the research denotes what …
5. A research problem may be defined as …
6. A problem is topical if …
7. A hypothesis is a tentative assumption that …
8. Hypotheses should meet the requirements of ….
9. Hypotheses are of three types, namely …
10. The hypothesis is rejected if ….
11. Formalized hypotheses include …

12. The conclusions of research follow the order…
13. If you want to be proud of your research, it should meet the following parameters:

_____ subject;
_____ hypothesis;
_____ research goal;
_____ research tasks;

_____ methods of research;
_____ presentation of data;
_____ interpretation;
_____ novel conclusions;
_____ bibliography list;
_____ format.

4. The logic of all experimental researches is basically the same, regardless of the field of study in which the scientist is working. The information presented in the table below is from the field of teaching foreign languages. Match the formulations in column A with basic stages of research in column B.

A	B
1) the model of teaching students to writing expository essays	a) general area of study
2) to elaborate the methodology of teaching writing expository essays and verify its effectiveness experimentally	b) object of research
3) literature review, observation, teaching experiment	c) research problem

A	B
4) teaching English as a foreign language	d) subject of research
5) contradiction between students' need in mastering academic writing and lack of model teaching it	e) research purpose
6) to define the properties and rhetorical organisation of expository essays; to study productive, reproductive and socio-cultural aspects of academic writing; to consider existing approaches to teaching writing	f) research objectives
7) the process of teaching students to academic writing	g) hypothesis
8) teaching students to writing expository essays will be more effective if it is organized by modelling basic characteristics of academic discourse thought of as an activity and as a product	h) methods

FOCUS ON LANGUAGE

5. Find Russian equivalents of the English words used in the text about research process.

1) precise a.	a) настоятельность, крайняя необходимость
2) clarify v.	b) беспорядочный, грязный
3) review v.	c) очищать, рафинировать, усовершенствовать
4) straightforward a.	d) опыт, квалификация, мастерство
5) messy a.	e) связанный, сопутствующий, объединённый
6) depict v.	f) пролить свет на, выяснить, сделать ясным
7) outline v.	g) очертить, обрисовать в общих чертах
8) reflect on v.	h) неясный, неопределённый, нечеткий
9) associated a.	i) описывать, изображать, рисовать
10) tentative a.	j) прямой, простой
11) refine v.	k) обозревать, рецензировать, пересматривать
12) specify v.	l) правдоподобный, приемлемый, вероятный
13) anticipate v.	m) точно определять, устанавливать, уточнять
14) hourglass n.	n) способность, склонность к чему-либо
15) urgency n.	o) разрабатывать, обдумывать, конкретизировать
16) expertise n.	p) подлежащий
17) aptitude n.	q) предвидеть, предугадывать
18) vague a.	r) размышлять, раздумывать
19) elaborate v.	s) предварительный, первоначальный
20) subject to a.	t) точный
21) plausible a.	u) песочные часы

6. Look through paragraph 1 of the text again and find the words which mean the same.

1) to explain something in an exact and detailed way

2) an idea that attempts to explain something but has not yet been tested or proved to be correct

3) not complicated or difficult to understand
4) a subject that people discuss or argue about, especially relating to society, politics etc.
5) complicated, difficult, and unpleasant to deal with
6) based on sensible practical reasons rather than emotions
7) to think about something carefully and seriously
8) to consider or discuss something again
9) to be connected with something in some way
10) a glass container that uses sand to measure one hour

7. Complete the sentences with the words above.

1. Darwin offered a working _____ for the mechanism of evolution.
2. There didn't seem to be any _____ explanation for his actions.
3. To make a claim, you must _____the date when the article was lost.
4. Josie _____ how easily she could have been killed.
5. It's a fairly _____operation.
6. His social problems were _____with heavy drinking.
7. I think that's a subject which will have to be _____.
8. It's a website devoted to environmental _____.
9. A symbol of _____ is used in computer programs to show that the program is busy and you should wait.
10. Politics has always been a _____business.

8. Translate the following sentences into Russian paying attention to the use of the words in bold type.

1. It would take too long to present here even a small number of the arguments which have been propounded both **in favor of and against the hypothesis.**
2. Our experiments were conducted as part of the Joint Global Ocean study, which had **the objective of examining** phytoplankton in the North Atlantic Ocean.
3. Our analysis will be rather informal, but it will **be elaborated in more detail** than has been practicable so far.
4. The new data may not **clarify** variations in the anatomical evolution of different groups of prehistoric populations.
5. The use of biological molecules in such reactions constitutes **a promising approach to** nanophase engineering.
6. Inadequate information allows two types of errors: **accepting a hypothesis as true** when it is false, and rejecting **a hypothesis as false** when it is in fact true.
7. Many of our observations can be objectively **confirmed by** informant tests.
8. The purpose of this book is to **argue in favor of** a fresh paradigm.
9. The book's approach is **consistent with** both its **point of departure** and its aims.
10. Having **laid out** the basic scheme, I should now ideally **specify in grater detail** what goes into each of components which make up my **parsing model.**

9. Analyze the following word combinations and use them to make sentences of your own.

the chief / general the central / key the main / particular the major / primary	aim goal purpose task	of this study research / paper	is to	investigate / establish / compare examine / outline explain / describe propose / specify discuss / demonstrate

the present	paper / investigation /	focuses on / deals with / is devoted to the problems of / provides insight into / presents a new approach to / proposes a new framework / inquires into / is aimed at / attempts to explain the mechanism of

advance formulate put forward accept check / test verify contradict reject prove	a hypothesis

10. Match the words which are very close in their meaning.

1) to clarify
2) to reject
3) to verify
4) to achieve
5) convincing
6) insight
7) formulation
8) to set up
9) aptitude
10) to inquire into

a) to attain
b) understanding
c) wording
d) to explain, elucidate
e) ability
f) to research
g) to check, prove
h) to refuse
i) forceful
j) to advance

PRACTICE ACTIVITIES

11. Read and translate the introduction to the review article on magnetic water treatment. Think of an appropriate heading to each of the three paragraphs of the text.

Magnetic Water Treatment: A critical Review

T. Kudra,Z. Alikhani, G.S.V. Raghavan*

The conventional methods of water purification for direct consumption and industrial use are based on costly and energy intensive technologies such as ion exchange, distillation, membrane separation, and others. Therefore a great attention is given to magnetic treatment which may offer low energy input, simple operation and minimal maintenance. In view of technical and economic advantages of the technology if developed, magnetic processing of water and aqueous salt solutions has been the subject of extensive studies around the world — a large fraction of these studies was carried out by scientists from the former Soviet Union (c.f. the review by Parker et al., 1984).

Despite numerous research papers and technical reports published to date, the possibility of altering water characteristics due to exposure to the magnetic field is still at least a dubious subject. While some researchers claim beneficial effects of magnetic treatment in such areas as desalination, reduction of scale formation, control of bio-growth or simply improvement of organoleptic properties of drinking water, the others neglect these effects at all. Even favorable data that seem to be well documented are often questioned by researchers who have tried to repeat the tests and got completely different results.

Such a fundamental controversy regarding the effectiveness of magnetic water processing and growing importance of water purification call for a renewed verification of the results obtained to date. This paper attempts to review critically the pertinent literature on magnetic water treatment, and to evaluate the possible effects from the magnetic field on dissolved compounds.

12. Find in the text English equivalents of the following Russian word combinations:

a. дорогостоящие технологии	
b. заявлять о благотворном воздействии	
c. магнитная обработка	
d. очистка воды	
e. неясный, сомнительный предмет	
f. опреснение воды	
g. игнорировать влияние	
h. непосредственное употребление	
i. положительные данные	
j. значительное разногласие	
k. повторная проверка	
l. водный раствор	
m. энергоёмкие технологии	

* Transactions of the TSTU. – 1998. – V. 4. – № 4. – P. 462–463.

n. преимущества технологии	
o. технический уход	
p. воздействие магнитным полем	
r. модификация свойств воды	
q. незначительные затраты энергии	
s. относящаяся к делу литература	

13. Analyze the text and define the problem being discussed, the subject and the purpose of the paper.

14. Do you think the author managed to prove that the problem chosen for consideration is topical? Make use of the evaluation form.

Items of evaluation	Yes or No
a. a review of the previously published papers on the topic is given.	
b. a reference to the authors who were active in the studies of the problem is made.	
c. what is still unknown on the topic is indicated.	
d. what is still vague and needs elaboration is stated.	
e. difficulties that spring up because the problem of the research has not been fully studied are shown.	

SELF-CHECK QUESTIONS

1. What stages does the research process include?
2. What factors determine the choice of research area?
3. What is the object of research?
4. What does the subject of research denote?
5. What is meant by a research problem?
6. What problem is considered to be topical?
7. What is a research hypothesis?
8. What requirements should hypotheses meet?
9. What do the three types of hypotheses differ in?
10. When is the hypothesis rejected?
11. What do formalized hypotheses include?
12. What order do the conclusions of research follow?
13. What are items of evaluation of a research project?

GLOSSARY

advance v.	выдвигать, вносить
anticipate v.	предвидеть, предугадывать
apparent a.	вероятный, видимый, очевидный
aptitude n.	способность, склонность к чему-либо
argue in favor of	приводить доводы в пользу
available a.	доступный, имеющийся в наличии
clarify v.	пролить свет на, выяснить, сделать ясным
consistent a.	совместимый, согласующийся, непротиворечивый
contradict v.	противоречить, отрицать
controversy n	разногласие
convincing a.	убедительный, доказательный
elaborate v.	разрабатывать, обдумывать, конкретизировать
find out v.	выяснить, разузнать, добраться до истины
forceful a.	убедительный, сильный, влиятельный
inquire into v.	исследовать, выяснять, разузнавать
lay out v.	планировать, разбивать, выставлять
messy a.	беспорядочный, безнравственный
neglect v.	отрицать, пренебрегать
point of departure	отправная точка
parsing n.	анализ, грамматический разбор
plausible a.	правдоподобный, приемлемый, вероятный
puzzle n.	вопрос, ставящий в тупик; загадка, проблема
propound v.	предлагать на обсуждение
reflect v.	размышлять, раздумывать
refute v.	опровергать, доказывать ложность
reject v.	отвергать, отклонять
review v.	обозревать, рецензировать, пересматривать
scope n.	область действия, охват, рамки
set v.	устанавливать
specify v.	точно определять, устанавливать, уточнять
spring up v.	возникать, появляться
straightforward a.	прямой, непосредственный, простой

subject n.	предмет, тема, субъект
tentative a.	предварительный, пробный, ориентировочный
topical a.	актуальный
urgency n.	настоятельность, крайняя необходимость
verify v.	проверять, подтверждать, верифицировать

UNIT 3

CHOOSING AND SPECIFYING THE RESEARCH TOPIC

The aim of this unit:

- to make you think about the importance of choosing the right research topic;
- to give information on the attributes of a good research topic;
- to provide understanding of techniques for generating and refining research ideas;
- to enable you to turn research ideas into clear research objectives;
- to get you acquainted with the content of the research proposal;
- to practise in narrowing the topic to a specific subject.

FOCUS ON INFORMATION

1. Skim the text about formulating the research topic. Find an appropriate heading for each paragraph.

a. the importance of theory in writing research projects
b. classification of techniques for generating research ideas
c. rational thinking techniques
d. the starting point of your research project
e. setting research objectives
f. writing a research proposal
g. creative thinking techniques
h. writing research questions

1. Before you start your research you need to have at least some idea of what you want to do. This is probably the most difficult, and yet the most important, part of your research project. Without being clear about what you are going to research it is difficult to plan how you are going to research it. This reminds us of a favourite quote in *Alice's Adventures in Wonderland*. This is part of Alice's conversation with the Cheshire Cat. In this Alice asks the Cat (Carrol, 1989: 63-64):

'Would you tell me, please, which way I ought to walk from here?'

'That depends a good deal on where you want to get to,' said the Cat.

'I don't much care where,' said Alice.

'Then it doesn't matter which way you walk,' said the Cat.

Formulating and clarifying the research topic is the starting point of your research project. Once you are clear about this you will be able to choose the most appropriate research strategy and data collection and analysis techniques.

2. If you have not been given an initial research idea there is a range of techniques that can be used to find and select a topic that you would like to research. They can be thought of as those that are predominantly *rational thinking* and those that involve more *creative thinking*. It is usually better to use a variety of techniques. In order to do this you will need to have some understanding of the techniques and the ways in which they work.

Table 3.1. Techniques for generating research ideas

More frequently used techniques for generating and refining research ideas	
Rational thinking	*Creative thinking*
• Examining your own strengths and interests • Looking at past project titles • Discussion • Searching the literature	• Keeping a notebook of ideas • Exploring personal preferences using past projects • Relevance trees • Brainstorming

3. *Examining your own strengths and interests.* It is important that you choose a topic in which you are likely to do well and, if possible, have already some academic knowledge. There is the need to think about your future. If you plan to work in financial management it would be sensible to choose a research project in the financial management field.

Looking at past project titles. Many postgraduates consider looking at past projects a useful way of generating research ideas. For undergraduate and taught masters degrees these are often called *dissertations*. For research degrees they are termed *theses*. A common way of doing this is to scan a list of past project titles for anything that captures your

imagination. Titles that look interesting or which grab your attention should be noted down, as should any thoughts you have about the title in relation to your own research idea.

Discussion. Colleagues, friends and university professors are all good sources of possible project ideas. In addition, ideas can be obtained by talking to practitioners and professional groups.

Searching the literature. Types of literature that are of particular use for generating research ideas include:

- articles in academic and professional journals;
- reports;
- books.

Of particular use are academic *review articles*. They contain both a considered review of the state of knowledge in that topic area and pointers towards areas where further research needs to be undertaken. In addition you can browse recent publications, in particular journals, for possible research ideas. *Reports* may also be of use. The most recently published are usually up to date and, again, often contain recommendations that may form basis of your research idea. *Books* by contrast are less up to date than other written sources. They do, however, often contain a good overview of research that has been undertaken, which may suggest ideas to you.

4. *Keeping a notebook of ideas*. One of the more creative techniques that we all use is to keep a *notebook of ideas*. All this involves is simply noting down any interesting research ideas as you think of them and, of equal importance, what sparked off your thought.

Exploring personal preferences using past projects. Another way of generating possible project ideas is to explore your *personal preferences* using past project reports from your university. To do this you should:

1) select six projects that you like;

2) for each of these six projects note down your first thoughts in response to three questions:

a. What appeals to you about the project?
b. What is good about the project?
c. Why is the project good?

3) select three projects that you do not like;

4) for each of these three projects note down your first thoughts in response to three questions:

a. What do you dislike about the project?
b. What is bad about the project?
c. Why is the project bad?

You now have a list of what you consider to be excellent and what you consider to be poor in projects. By examining this list you will begin to understand those project characteristics that are important to you and with which you feel comfortable. These can be used as the parameters against which to evaluate possible research ideas.

Relevance trees. Relevance trees may also prove useful in generating research topics. You should start with a broad concept from which you generate further (usually more specific) topics. Each of these topics forms a separate branch from which you can generate further more detailed sub-branches. As you proceed down the sub-branches more ideas are generated and recorded.

Brainstorming. The technique of brainstorming can be used to generate and refine research ideas. To brainstorm you should:

a. define your problem – that is, the sorts of ideas you are interested in – as precisely as possible;
b. ask for suggestions relating to the problem;
c. record all suggestions;
d. review all the suggestions and explore what is meant by each;
e. analyze the list of suggestions and decide which appeal to you most as research ideas and why.

5. One of the key criteria of your research success will be whether you have a set of clear conclusions drawn from the data you have collected. The extent to which you can do that will be determined largely by the clarity with which you have posed your initial research questions.

Defining research questions, rather like generating research ideas, is not a straightforward matter. Beware of research questions which are too easy or too difficult. A question that prompts a descriptive answer, for example “What is the proportion of graduates entering the civil service who attended the old-established UK universities?” is far easier to answer than: “Why are graduates from old-established UK universities more likely to enter the civil service than graduates from other university?”

It is often a useful starting point in the writing of research questions to begin with one general focus research question that flows from your research idea. This may lead to several more detailed questions or the definition of research objectives. Table 3.2. has some examples of general focus research questions.

Table 3.2. Examples of research ideas and their derived focus research questions

Research idea	*General focus research question*
Job recruitment via the Internet	How effective is recruiting for the new staff via the Internet in comparison with traditional methods?
Advertising and share prices	How does the running of a TV advertising campaign designed to boost the image of a company affect its share price?
The use of aromas as a marketing device	In what ways does the use of specific aromas in supermarkets affect buyer behaviour?
The future of trade unions	What are the strategies that trade unions should adopt to ensure their future viability?

6. General focus research questions may be used as a base from which you write a set of research objectives. Objectives are more generally acceptable to the research community as evidence of the researcher's clear sense of purpose and direction. Research objectives require more rigorous thinking, which derives from the use of more formal language.

Table 3.3. summarizes the objectives of some research conducted by one of our postgraduates

Table 3.3. Formulating research questions as research objectives

Research question	Research objective
1. Why have organizations introduced team briefing?	1. To identify organisations' objectives for team briefing schemes
2. How can the effectiveness of team briefing schemes be measured?	2. To establish suitable effectiveness criteria for team briefing schemes
3. Has team briefing been effective?	3 To describe the extent to which the effectiveness criteria for team briefing have been met
4. How can the effectiveness of team briefing be explained?	4a. To determine the factors associated with the effectiveness criteria fir team briefing being met. 4b. To estimate whether some of those factors are more influential than other factors
5. Can the explanation be generalized?	5. To develop an explanatory theory that associates certain factors with the effectiveness of team briefing schemes

7. Unlike 'what' questions, 'why' questions go beyond descriptions and require analysis. They look for explanations, relationships, comparisons, predictions, generalizations and theories. It is a shot step from the 'why' research question to the testing of an existing theory in a new situation or the development of your own theory. This may be expressed as a hypothesis that is to be tested or the eventual answer to your research question may be the development or amendment of a theory. Although intelligence gathering (or it is often called descriptive research) will play a part in your research, it is unlikely to be enough. You should be seeking to explain phenomena, to analyse relationships, to compare what is going on in different research settings, to predict outcomes and to generalize; then you will be working at the theoretical level. This is a necessary requirement for most assessed research projects.

8. Writing a research proposal is a crucial part of the research process. If you are applying for research funding, or if your proposal is going before an academic research committee, then you will know that you will need to put a great deal of time into the preparation of your proposal. However, even if the official need for a proposal is not so vital it is still a process that will repay very careful attention.

Writing a research proposal helps you to organize your ideas, and can be thought of as a contract between you and the reader.

The content of the research proposal should tell the reader what you want to do, why you want to do it, what you are trying to achieve, and how you to plan to achieve it. Therefore the structure of the research proposal includes: title, background, research question(s) and objectives, method, timescale, resources and references.

You may find a worked example of a written research proposal in Case study on page 44.

2. Scan the text and write the number of the paragraph where you can find the following information. Do it as quickly as possible.

____ rational thinking
____ theory dependant research
____ a note-book of ideas
____ personal preferences
____ 'why' and 'what' questions
____ review articles
____ general focus research question
____ the development and amendment of a theory
____ intelligence gathering
____ types of literature
____ branches and sub-branches

3. Match terms in column A with their definitions in column B

A	B
1) creative thinking technique	a) situation in which the results will be of similar value whatever they are
2) thesis	b) formulation regarding the cause and effect relationships between two or more variables, which may or may not have been tested
3) notebook of ideas	c) if we accept that every purpositive decision we take is based on the assumption that certain consequences will flow from the decision, then these decisions are theory dependant
4) rational thinking technique	d) the usual name for research projects undertaken for Master of Philosophy (MPhil) and Doctor of Philosophy (PhD) degrees, written for an academic audience
5) relevance tree	e) one of a number of key questions that the research process will address. These are often precursor of research objectives
6) research question	f) technique for generating research topics that starts with a broad concept from which further (usually more specific) topics are generated. Each of these topics forms a separate branch, from which further sub-branches that are more detailed can be generated
7) a symmetry of potential outcomes	g) one of a number of techniques for generating and refining research ideas based on a systematic approach such as searching the literature or examining past projects
8) theory	h) one of a number of techniques for generating and refining research ideas based on non-rational criteria
9) theory dependant	i) technique for noting down any interesting research ideas as you think of them

4. Examine Figure 3.1. illustrating the criteria which a good research topic should meet.

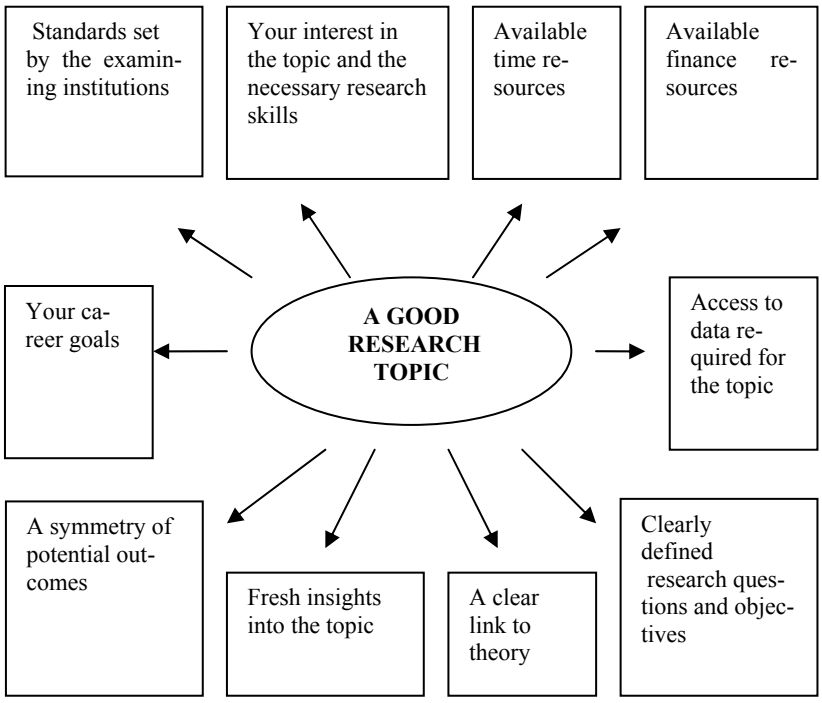


Figure 3.1. Attributes of a good research topic

5. Form a checklist of attributes of a good research topic inserting the missing words from Figure 3.1. The first two questions have been done for you as an example. Does the research topic you proposed meet these qualifications?

Checklist of attributes of a good research topic
✓ Does the topic meet the standards set by the examining institutions?
✓ Is the topic something which you are really interested in?
✓ Do you have the _____ to undertake the topic?
✓ Does your research topic contain issues that have _____?
✓ Is the research topic achievable within the _____ _____?
✓ Are you reasonably certain of being able to gain _____ _____ you are likely to require for this topic?
✓ Will your research be able to provide _____?
✓ Does the research topic match your _____?
✓ Are the outcomes for this research topic likely to be _____: that is _____?
✓ Are you able to state your research _____ clearly?
✓ Is the research topic achievable within the _____ that are likely to be available?

6. One of the attributes of a good research topic is symmetry of potential outcomes. To gain clear understanding of what it means and how to ensure it read and analyze the following text as a worked example. Be ready to answer the questions:

a. What was Mark's initial research idea?
b. What made him change the topic?
c. What did he decide to research?
d. Will a refined research topic ensure symmetry of potential outcomes?

Mark was a part-time postgraduate student. His initial research topic was concerned with finding out whether there was any relationship between the level of stress experienced by social workers and the number of years they had been employed as social workers. If he established that there was a link between these factors this would be an interesting

finding; if, however, he discovered no relationship the finding would be less interesting and would have no real practical relevance to his organization.

He therefore decided to amend his topic to exploring and understanding the impact of a forthcoming stress management course on the relative levels of stress experienced by social workers before the course. The results of this research would be interesting and important whether or not the course had an impact.

FOCUS ON LANGUAGE

7. Find Russian equivalents of the English words and word combinations used in the text.

1) clarifying the research topic	a) завладеть воображением, увлечь
2) initial research idea	b) внесение поправок в теорию
3) to undertake a project	c) привлечь внимание
4) relevance tree	d) потенциальный результат
5) to capture smb's imagination	e) исходная идея научного исследования
6) to grab smb's attention	f) преимущественно
7) fresh insights	g) сбор данных
8) predominantly	h) уточнение темы научного исследования
9) to browse recent publications	i) тщательное обдумывание
10) to spark off a thought	j) выполнять проект
11) to evaluate research ideas	k) оценивать исследовательские идеи
12) potential outcome	l) причинно-следственные отношения
13) rigorous thinking	m) современное понимание
14) intelligence gathering	n) просматривать последние публикации
15) amendment of a theory	o) предсказание, прогноз
16) eventual answer	p) вызывать мысль
17) cause and effect relationships	q) окончательный ответ
18) prediction	r) дерево относительной важности
19) to pursue the idea	s) обзорная статья
20) review article	t) рассматривать идею

8. Look through the text again and find the words which mean the same. The paragraph numbers are given in brackets.

1) a sentence or phrase taken from a work of literature or other piece of writing and repeated in order to prove a point or support an argument (1)

2) a student who is doing a university course for a first degree (3)

3) a university degree that students get if they study for one or two years after their first degree (3)

4) to look through or read parts of a book, magazine, etc. without any clear purpose (3)

5) a way of developing new ideas through a discussion in which several people make lots of suggestions and the best ones are chosen (4)

6) standards that are used for judging something or making a decision about something (5)

7) facts or physical signs that help to prove something (6)

8) a reason you give for something that has happened or something you have done (7)

9. Match the words which are very close in their meaning.

1) clarity	a) final
2) technique	b) inventive
3) rigorous	c) procedure
4) to spark off	d) theme
5) topic	e) clearness
6) creative	f) to carry out
7) initial	g) reflection
8) to undertake	h) to investigate
9) eventual	i) to empower
10) thinking	j) to cause
11) intelligence	k) careful
12) to explore	l) primary
13) to enable	m) information

10. Match the words having the opposite meaning.

1. to clarify	a. synthesis
2. to contrast	b. eventual
3. initial	c. excellent
4. strength	d. to compare
5. poor	e. out-of-date
6. sensible	f. to degenerate
7. up-to-date	g. unreasonable
8. to generate	h. to obscure
9. analysis	i. weakness

11. Read the text below. Use the word given in capitals at the end of each line to form a negative word that fits in the space in the same line. There is an example at the beginning (0).

TOPICS TO AVOID	
To avoid wasting time and effort , you ought to know that certain kinds of topics are (0) <u>unsuitable</u> for research papers. Avoid the following problems when choosing the topic.	SUIT
1. Do not reuse a paper you have written for another instructor. To pretend you have done new work when, in fact, you have not done any is (1)_____ .	HONEST
2. *Do not choose a topic which you do not plan to do all the work yourself.* If anyone else does either the research or any of the writing on this assignment, the work is not your own and is, therefore, (2) _____ .	ACCEPT
3. *Do not choose a topic about which your conclusions will be* (4)_____ .	RELEVANCE
4. Do not start work on any topic unless you think it will hold your interest long enough to complete the paper. Research is a difficult enough assignment in itself. If you have to fight boredom with your own topic along the way, it becomes (5)_____ .	POSSIBILITY
5. Be wary of choosing a topic so neutral that you cannot express an attitude toward it. Unless you plan no more than a simple factual report – and not a research paper – you will need to express some views or opinions about your material. Many teachers (6)_____ reportorial papers.	COURAGE
6. Do not pursue a topic that seems to go nowhere for you. If you have great trouble narrowing a topic to a manageable subject of finding an approach to a subject, per-	

haps that topic will prove (7)_____ for you. *7. Consider avoiding a highly controversial topic unless you think you can bring something new and special to the subject*. Because of time and length limitations on the paper your material can be (8)_____ to cover a controversial topic to your satisfaction.	PRODUCTION SUFFICIENCY

12 Identify the nouns, adjectives, adverbs and verbs in the following group of words. Use the appropriate ones in the sentences below. Choose the correct form of the word.

a. prefer, **b.** preferable, **c.** preferably, **d.** preference, **e.** preferential, **f.** preferentially

Note the difference between *preferable* and *preferential.*

Preferable means *better, esp. because more suitable; that one should or would prefer.*

Preferential means *giving, receiving or showing preference.*

1. Gradual change is _____ to sudden, large-scale change.
2. Don't expect to be treated _____ .
3. In considering people for jobs, we give _____ to those with some experience.
4. This is a controversial new law that gives _____ treatment to certain minority groups.
5. Would you _____ that we reschedule the meeting for next week.
6. I can meet you at any time tomorrow, but _____ not before 11 o'clock.

PRACTICE ACTIVITIES

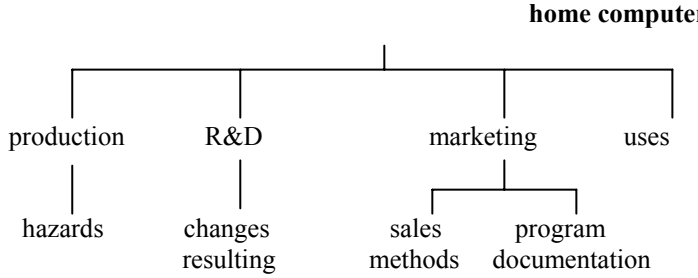
FORMULATING A SUBJECT FOR RESEARCH

The term 'topic' in this textbook is only a starting place because it describes a broad and general area of knowledge, not the actual subject you will investigate; there is still more narrowing to do before you find that specific subject. If you have trouble in narrowing a topic to workable proportions, you should try one of the three methods: **subdividing, free association** and the **five Ws.**

SUBDIVIDING

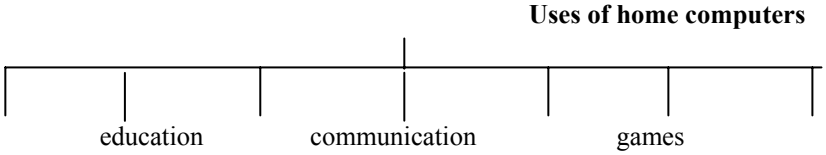
One way to narrow a topic is to write down the general area you have selected and then divide it into progressively smaller units, subdividing it until you reach a subject you are interested in researching.

Example:



Obviously, each of the four areas resulted from the first subdivision is far too broad to work with. As a result of a second-level subdivision the following topics were produced: "Changes in Home Computers Resulting from Research and Development", "How Home Computers Are Marketed", "Program Documentation Provided with Home Computers" . They are also too general. However, "Production Hazards in the Manufacture of Home Computers" is narrow enough to serve as the basis for a research project.

13. The "uses" item in the first subdivision of home computers is also far too general. Think of further subdivisions which could result in a suitable subject for research.



FREE ASSOCIATION

This is the practice of writing down words or phrases that occur to you just as they come to mind, without worry about order, usefulness, applicability. Begin by writing down the topic you have selected and underneath it list everything that comes to your mind. Make the list as quickly as you can.

Example:

Crime

police	laws
punishment	penal systems
prevention	big cities
white-collar	growing rates
repeat offenders	death penalty

From this list you could choose a subject, but even it might be too broad. "Laws About Crime" or "The Penal System" are impossible to work with. Start another listing beginning with one of the phrases on the above list.

Example:

White-Collar Crime

offices	department stores
perpetrators	internal security systems

You may decide that "Internal Security Systems to Prevent White-Collar Crime" is a subject you want to investigate.

14. Use method of free association to formulate an appropriate subject for research by narrowing the topic "Unemployment". Some ideas are given as an example.

UNEMPLOYMENT	
economic recession	global financial crisis

THE FIVE Ws

Asking questions to which you want answers is still another way of narrowing a topic to a subject you can work with. You can develop questions in an organized way by adapting the journalistic tradition that good reporting includes covering the five Ws of a story: who, what, where, when, and why.

Who – people

What – problems, things, ideas

Where – places

When – past, present, future

Why – causes, reasons, results, conditions

To use these five Ws as a help in finding a research subject, write your topic at the top of the page and under it each of the five W words as headings across the page. Then use brainstorming or free association with each of the words in a column heading, writing down tour ideas as lists.

Example:

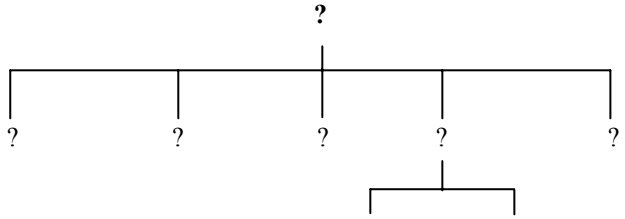
TELEVISION				
Who?	**What?**	**Where?**	**When?**	**Why?**
show hosts	violence	satellite transmission	commercial beginnings	election
actors and actresses	news	remote places	new channels to come	interference with studies
directors	religion	New York	broadcast times	persuasive power
Johnny Carson	commercials	local stations	technical development	education

Most words in the listings above are still too broad. "Television news" still need to be narrowed further. To do so, the same five Ws method can be applied again. "How Television News Manipulates Audiences" or "Some Limitations of Television as a News Source" are possible subjects you can arrive at using this method.

15. Use method of five Ws to formulate a suitable subject for research by narrowing the topic "Market Economy".

MARKET ECONOMY				
Who?	**What?**	**Where?**	**When?**	**Why?**

16. The subject for research may be actually arrived at by a combination of two of the methods you have learnt, for example, subdividing and free association. Doing so, formulate the subject for your research by narrowing general area you are interested in.



CASE STUDY

A WRITTEN RESEARCH PROPOSAL

Puvadol was a student from Thailand who returned home from the UK to complete his MA dissertation. His proposed dissertation concerned the applicability of Western methods of involving employees in decision-making in Thai organizations.

An abbreviated version of Puvadol's proposal is the following.

Title

The influence of Thai culture on employee involvement.

Background

Involving employees in the decision-making of their employing organisations has been increasingly popular in Europe and North America in recent years. The influx of American organisations into Thailand has meant that similar approaches are being adopted. However, this assumes that Thai employees will respond to these techniques as readily as their European and American counterparts.

Doubts about the validity of these assumptions derive from studies of Thai national culture (Komin, 1990). Using Rokeach's (1979) conceptual framework, Komin characterised Thai culture in a number of ways. I have isolated those that relate to employee involvement. These are that Thais wish to:

a. save face, to avoid criticism and to show consideration to others;
b. exhibit gratitude to those who have shown kindness and consideration;
c. promote smooth, conflict-free interpersonal relations;
d. interpret 'rules' in a flexible way with little concern for principles;
e. promote interdependent social relations;
f. be seen to be achieving success through good social relations rather than individual success.

I intend to demonstrate in this section that these six cultural values contradict the values of employee involvement (e.g. employee involvement may involve employees in openly criticising managers, which directly contradicts **a** above).

Research objectives

- to examine the assumptions behind the management technique of employee involvement;
- to establish the characteristics of the Thai national culture;
- to identify the opinions of Thai employees and their managers, working in American-owned organisations in Thailand, towards values underpinning employee involvement;
- to draw conclusions about the applicability of employee involvement to Thai employees.

Method

1. Conduct a review of the literatures on employee involvement and Thai national culture in order to develop research hypotheses.

2. Carry out primary research in three American-owned petrochemical and manufacturing organisations in Thailand to assess the opinions of Thai employees and their managers towards values underpinning employee involvement. Informal approval has been gained from three organisations. American-owned organisations are relevant because it is in these that employee involvement is most likely to be found and values underpinning employee involvement exhibited. Petrochemical and manufacturing organisations are chosen because the occupations carried out in these organisations are likely to be similar, thus ensuring that any differences are a function of Thai national culture rather than of occupational culture.

3. A questionnaire will be developed with questions based on the Thai values **a–f** in the Background section above. Each value will lead to a hypothesis (e.g. employee involvement may not be appropriate to Thai culture because it may mean that employees openly criticise their managers). The questions in the questionnaire will seek to test these hypotheses. The questionnaire will be distributed to a sample (size to be agreed) of employees and of managers across all three organisations.

4. Data analysis will use the SPSS software. Statistical tests will be run to ensure that results are a function of Thai cultural values rather than of values that relate to the individual organisations.

Timescale

January – March 2002: review of literature.
April 2002: draft literature review.
May 2002: review research methods literature and agree research strategy.
June 2002: agree formal access to three organisations for collection of primary data.
July-August 2002: compile, pilot and revise questionnaire.
September 2002: administer questionnaire.
October-November 2002: final collection of questionnaires and analysis of data.
November 2002-February 2003: completion of first draft of project report.
March-May 2003: final writing of project report.

Resources

I have access to computer hardware and software. Access to three organisations has been negotiated, subject to confirmation. My employer has agreed to pay all incidental costs as part of my course expenses.

References

Komin, S. (1990) *Psychology of the Tai People*: *Values and Behavioral Patterns,* Thailand, National Institute of Development Administration (in Thai).

Pokeach, M. (1979) *Understanding Human Values*: *Individual and Society*, New York, The free Press.

17. Answer the questions:

1. What is Puvadol' MA dissertation concerned with?
2. What factors do you think predetermined the choice of this topic?
3. In your opinion, is the research problem stated by Puvadol topical?
4. What research objectives has he set?
5. What methods of research is Puvadol going to use in order to prove his hypothesis?
6. Why did Puvadol decide to choose American-owned organizations as a place for organizing his experiment?
7. Why were petrochemical and manufacturing organisations chosen?
8. What data does Puvadol want to obtain using a questionnaire?
9. What methods of data analysis are supposed to be employed?
10. Is the research topic achievable within a year?

PROGRESSING YOUR RESEARCH PROJECT

From research ideas to a research proposal

- If you have not been given a research idea consider the techniques available for generating and refining research ideas. Choose a selection of those with which you feel most comfortable, making sure to include both rational and creative thinking techniques. Use these to try to generate a research idea or ideas. Once you have got some research ideas, or if you have been unable to find an idea, talk to your scientific advisor.
- Evaluate your research ideas against the checklist of attributes of a good research project.
- Refine your research ideas using a selection of the techniques available for generating and refining research ideas. Re-evaluate your research ideas against the checklist of attributes of a good research project. Remember that it is better to revise (and in some situations to discard) ideas that do not appear to be feasible at this stage. Integrate your ideas using the process of working up and narrowing down to form one research idea.
- Use your research idea to write a general focus research question. Where possible this should be a 'why?' or a 'how' rather than a 'what?' question.

- Use the general focus research question to write more detailed research questions and your research objectives.
- Write your research proposal making sure it includes a clear title and sections on:

– the background to your research;
– your research questions and objectives;
– the method you intend to use;
– the timescale for your research;
– the resources you require;
– references to any literature to which you have referred.

SELF-CHECK QUESTIONS

1. Why is it important to spend time choosing and clarifying your research topic?
2. What are the attributes of a good research topic?
3. What topics should be avoided?
4. What techniques can be used for generating and refining research ideas?
5. What techniques involve rational thinking?
6. What is the usual name for research projects undertaken for Master and Doctor of Philosophy degrees?
7. What techniques involve creative thinking?
8. What are the advantages of brainstorming?
9. Why is it important to define clearly research questions and objectives?
10. What is the difference between research and intelligence gathering?
11. What does the work at the theoretical level imply?
12. What are methods of narrowing a topic to a specific subject?

GLOSSARY

amendment n.	исправление, корректирование, поправка
appeal v.	привлекать, притягивать; влечь, нравиться
assess v.	оценивать, определять величину
beyond	вне; выше, сверх
brainstorm v.	искать решение какой-либо задачи с помощью техники "мозгового штурма"
briefing n.	информационное сообщение, инструктаж
browse v.	пролистать, проглядеть; небрежно рассматривать
capture v.	завладеть, захватить, увлечь; завоевать
considered a.	обоснованный, продуманный
death penalty n.	смертный приговор
evaluate v.	оценивать; давать оценку; составлять мнение; определять качество
experience v.	испытывать
eventual a.	конечный, окончательный
grab v.	завладевать, захватывать
impact n.	влияние, воздействие, удар
intelligence gathering n.	сбор сведений
offender n.	правонарушитель
outcome n.	исход, итог, последствие, результат
penal system	система наказания
perpetrator n.	преступник, правонарушитель
pursue v.	рассматривать, заниматься ч-л.
practitioner n.	практик, профессионал
predict v.	предсказывать, пророчить; прогнозировать
predominantly adv.	особенно, преимущественно
purposive a.	служащий определенной цели, целевой
relevance tree n.	дерево относительной важности
rigorous a.	доскональный, тщательный; точный
spark off v.	вызывать, порождать,
undertake v.	предпринимать, совершать
variable n.	переменная (величина)
wary a.	осторожный

UNIT 4

CRITICALLY REVIEWING THE LITERATURE

The aims of this unit:

- to make you think about the importance and purpose of the critical literature review;
- to give you information on what you need to include when writing your critical review;
- to get you acquainted with a variety of literature sources;
- to help you evaluate the relevance and sufficiency of the literature found;
- to provide practice in referencing the literature found accurately.

FOCUS ON INFORMATION

1 Skim the text about critical literature review. Find an appropriate heading for each paragraph.

a. planning the literature search
b. definition of critical literature review
c. evaluating the literature found
d. what is meant by critical
e. the purpose of the critical review
f. the structure of the critical review
g. the content of the critical review
h. literature sources

1. Knowledge doesn't exist in a vacuum, and your work only has value in relation to other people's. Your work and your findings will be significant only to the extent that they're the same as, or different from, other people's work and findings.

You therefore need to establish what research has been published in your chosen area and try to identify any other research that might currently be in progress. The items you read and write about will enhance your subject knowledge and help you to clarify your research question(s) further. This process is called *critically reviewing the literature.*

2. Your critical literature review will form the foundation on which your research is built. Its main purpose is to help you to develop a good understanding and insight into relevant previous research and the trends that have emerged. Your review also has a number of other purposes:

- to help you to refine further your research question(s) and objectives;
- to highlight research possibilities that have been overlooked implicitly in research to data;
- to discover explicit recommendations for further research. These can provide you with a superb justification for your own research question(s) and objectives;
- to help you to avoid simply repeating work that has been done already;
- to sample current opinions in newspapers, professional journals, thereby gaining insights into the aspects of your research question(s) and objectives that are considered newsworthy;
- to discover and provide an insight into research approaches, strategies and techniques that may be appropriate to your own research question(s) and objectives.

3. As you begin to find, read and evaluate the literature, you will need to think how to combine the academic theories and ideas it contains to form the critical review that will appear in your project report. This will need to discuss critically the work that has already been undertaken in your area of research, and reference that work. It will draw out the key points and trends and present them in a logical way. In doing this you will provide readers of your project report with the necessary background knowledge to your research question(s) and objectives and establish the boundaries of your own research. It will also enable the readers to see your ideas against the background of previous published research in the area. This does not necessarily mean that your ideas must extend, follow or approve those set out in the literature. You may be highly critical of the earlier research and seek to discredit it. However, if you wish to do this you must still review the literature, argue clearly why it is problematic, and then justify your own ideas.

In writing your critical review you will therefore need:

- to include the key academic theories within your chosen area;
- to demonstrate that your knowledge of your chosen area is up to date;
- to show how your research relates to previous published research;
- to assess the strengths and weaknesses of previous work and take these into account in your arguments;
- to justify your arguments by referencing previous research;
- through clear referencing, to enable those reading your research report to find the original work you cite.

4. Within the context of reviewing the literature, the term 'critical' refers to the judgement you exercise. It therefore describes the process of providing a detailed and justified analysis of and commentary on the merits and faults of the key literature within your chosen area. This means that, for your review to be critical, you should:

- refer to work by recognized experts in your chosen area;
- consider and discuss work that supports and work that opposes your ideas;

- make reasoned judgements regarding the value of others' work to your research;
- support your arguments with valid evidence in a logical manner;
- distinguish clearly between fact and opinion.

5. Although there is no single structure that your critical review should take, it is useful to think of the review as a funnel in which you:

- start at a more general level before narrowing down to your specific research question(s) and objectives;
- provide a brief overview of key ideas;
- summarize, compare and contrast the work of the key writers;
- narrow down to highlight the work most relevant to your research;
- provide a detailed account of the findings of this work;
- highlight the issues where your research will provide fresh insights;
- lead the reader into subsequent sections of your project report, which explore these issues.

Whichever way you structure your review you must demonstrate that you have read, understood and evaluated the items you have located. The key to writing a critical literature review is therefore to link together the different ideas you find in the literature to form a coherent and cohesive argument, which set in context and justify your research. Obviously, it should relate to your research question and objectives. It should show a clear link from these as well as a clear link to the empirical work that will follow.

6. The literature sources available to help you to develop a good understanding of and insight into previous research can be divided into three categories: primary (published and unpublished), secondary, and tertiary. In reality these categories often overlap: for example, primary literature sources including conference proceedings can appear in journals, and some books contain indexes to primary and secondary literature.

Primary literature sources (also known as *grey literature*) are the first occurrence of a piece of work. They include published sources such as reports, conference proceedings, theses. They also include unpublished manuscript sources such as letters, and memos.

Secondary literature sources such as books and journals are the subsequent publications of primary literature. These publications are aimed at a wider audience. They are easier to locate than primary literature as they are better covered by the tertiary literature.

Tertiary literature sources, also called *search tools*, are designed either to help to locate primary and secondary literature or to introduce a topic. They therefore include indexes and abstracts as well as encyclopedias and bibliographies.

Your use of these literature sources will depend on your research questions and objectives. For some research projects you may use only tertiary and secondary literature; for others you may need to locate primary literature as well.

7. It is important that you plan the literature search carefully to ensure that you locate relevant and up-to-date literature. This will enable you to establish what research has been previously published in your area and to relate your own research to it. Time spent planning will be repaid in time saved when searching the literature. As you start to plan your search, you need to beware of information overload! Before commencing your literature search you should undertake further planning by:

- defining the parameters of your search;
- generating key words and search terms;
- discussing your ideas as widely as possible.

Techniques to help you in this include brainstorming and relevance trees.

8. Once obtained, the literature must be evaluated for its relevance to your research questions and objectives. The following questions provide a checklist to help you in this process.

- ✓ How recent is the item?
- ✓ Have you seen references to this item (or its author) in other items that were useful?
- ✓ Does the item support or contradict your arguments? For either it will probably be worth reading!
- ✓ Does the item appeared to be biased? Even if it is it may still be relevant to your critical review!
- ✓ What are the methodological omissions within the work? Even if there are many it still may be of relevance!
- ✓ If the precision sufficient? Even if it is imprecise it may be the only item you can find and so still of relevance!

Your assessment of whether you have read a sufficient amount is even more complex. It is impossible to read everything, as you would never start to write your critical review. Yet you need to be sure that your critical review discusses what research has already been undertaken and that you have positioned your research project in the wider context, citing the main writers in the field. One clue that you have achieved this is when further searching provides mainly references to items you have already read. You also need to check what constitutes an acceptable amount of reading, in terms of both quality and quantity, with your scientific advisor.

2. Match terms in column A with their definitions in column B

A	B
1) critical literature review	a) an alphabetical list of something such as subjects or names at the back of a book, that shows on which page they are mentioned
2) key word	b) the first occurrence of a piece of work, including published sources such as government white papers, and unpublished sources such as letters, memos and committee minutes
3) tertiary literature source	c) detailed and justified analysis and commentary of the merits and faults of the literature within a chosen area, which demonstrates familiarity with what is already known about your research topic
4) grey literature	d) journal in which the articles have been evaluated by academic peers prior to publication to assess their quality and suitability
5) index	e) journals produced by a professional organisation for its members, often containing articles of a practical nature related to professional needs
6) professional journal	f) source designed to help locate primary and secondary literature, such as an index, abstract, or bibliography
7) references	g) article that contains both a considered review of the state of knowledge in a given topic area and pointers towards areas where further research needs to be undertaken
8) refereed academic journal	h) International Standard Serial Number, a unique eight-digit number used to identify a print or electronic periodical publication
9) review article	i) bibliographic details of all items referred to directly in the text
10) ISBN	j) basic term that describes the research questions and objectives which can be used in combination to search the tertiary literature
11) ISSN	k) International Standard Book Number; a unique 9-digit number given to every book that is published

3. Figure 4.1. demonstrates different categories of literature resources. It highlights that while information flows from primary to secondary to tertiary sources it becomes less detailed but more easily accessible. Complete the scheme using the words from the bottom:

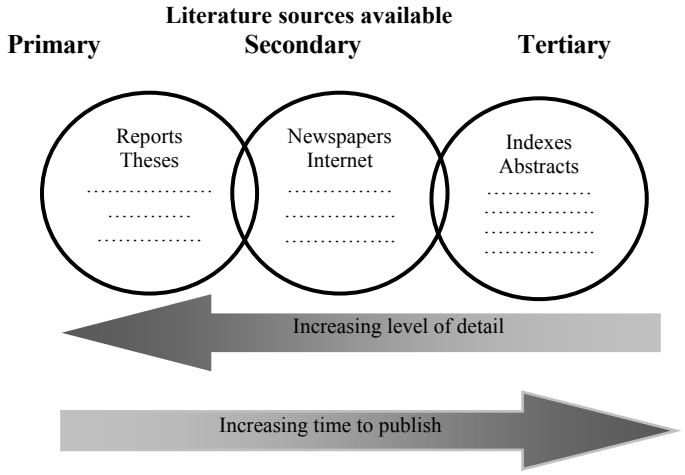


Figure 4.1. Literature sources available

a. dictionaries, b. books, c. catalogues, d. company reports, e. professional journals, f. bibliographies, g. unpublished manuscripts, h. encyclopaedias, i. conference reports, j. conference proceedings, k. refereed academic journals.

4. Mark the following statements as T (true) or F (false):

Statement	T	F
1. Bibliographic details required to find a journal article normally include the author, year of publication, title of article, title of journal, volume, part/issue, page numbers		
2. Theses can be difficult to locate and, when found, difficult to access as there may be only one copy at the awarding institution		

3. Academic journals are never available on the Internet		
4. While reviewing the literature you do not need to assess the strengths and weaknesses of previous work, including omissions and bias		
5. For your review to be critical you don't need to make reasoned judgements regarding the value of others' work to your research		
6. By fully acknowledging the work of others you will avoid charges of plagiarism		

5. Match the following ways of literature review with their explanations and examples:

1 compilation **5 interpretation**
2 confrontation **6 thesis support**
3 disputation **7 allegiance**
4 collation

a. simply adding similar quotations from various sources and giving short comments on the contents of these quotations. E.g.:

A writes that … B agrees with A and adds that … C also writes about it and confirms that…

b. adding quotations from one source to another and emphasizing the difference in ideas. E.g.:

A says in his/ her article that … B agrees with A but stresses the importance of … C also deals with this problem but focuses the attention on …

c. giving a quotation from a literary source and arguing with it. E.g.:

A says in his/ her article that … This does not seem very convincing because as experience shows …

d. putting together two quotations which hold a different view and/ or contradict each other. E.g.:

A says in his article that… B argues with this point and insists that C has a completely different approach because as he/ she thinks ...

e. quoting from a source and giving it one's full support. E.g.:

A writes in this book that … One can't but agree on this principle because it really seems that … One couldn't agree more to this idea …

f. giving a quotation from a source and bringing to the surface what seems to be hidden between the lines. E.g.:

A says in the article that … This may mean that either … or perhaps …

g. formulating one's own thesis and supporting it with a quotation from a literary source. E.g.:

Observations have shown that … This is supported by A who did the research earlier and also came to the finding that…

FOCUS ON LANGUAGE

6. Find Russian equivalents of the English words used in the text.

1) enhance v.	a) обоснование, оправдание
2) emerge v.	b) отбирать образцы, пробовать
3) implicitly adv.	c) увеличивать, усиливать, повышать

4) explicit a.	d) набросать (план), вытягивать, извлекать
5) justification n.	e) неявно, скрыто, косвенным образом
6) sample v.	f) появляться, выясняться, вставать (о вопросе)
7) draw out v.	g) явный, определённый, высказанный до конца
8) discredit v.	h) использовать, пользоваться
9) exercise v.	i) логически последовательный, когерентный
10) distinguish v.	k) остерегаться
11) reference v.	l) необъективный, пристрастный, тенденциозный
12) coherent a.	m) не доверять, дискредитировать
13) cohesive a.	n) снабдить текст ссылками
14) beware v.	o) различать(ся)
15) biased a.	p) связный
16) relevance n.	q) частично совпадать, перекрывать
17) overlap v.	r) относимость, значимость, уместность

7. Fill in the blanks in the text using the phrases from the box.

a) critically discussing and referencing work
b) develop a thorough understanding of and insight into
c) research question(s) and objectives
d) primary literature
e) brainstorming and relevance trees
f) at a more general level
g) a logically argued way
h) following up references in articles you have already read
i) key words and search terms

A critical review of the literature is necessary to help you to 1) ____ previous research that relates to your research question(s) and objectives. Your review will set your research in context by 2) _____ that has already been undertaken, drawing out key points and presenting them in 3)_____, and highlighting those areas where you will provide fresh insights. It will lead the reader into subsequent sections of your project report.

There is no one correct structure for a critical review, although it is helpful to think of it as a funnel in which you start 4) _____ prior to narrowing down to your specific research question(s) and objectives.

Literature sources can be divided into three categories: primary, secondary and tertiary. In reality, these categories often overlap. Your use of these resources will depend on your research question(s) and objectives. Some may use only tertiary and secondary literature. For others, you may need to locate 5) _____ as well.

When planning your literature search you need:

- to have clearly defined 6) _____;
- to define the parameters of your search;
- to generate 7) _____;
- to discuss your ideas as widely as possible.

Techniques to help you in this include 8) _____.

Your literature search will be undertaken using a variety of approaches in tandem. These will include:

- searching using tertiary sources and the Internet;

9) _____;

- scanning and browsing secondary literature in your library.

Once obtained, the literature must be evaluated for its relevance to your research question(s) and objectives. This must include a consideration of each item's currency. Each item must be read and noted. Bibliographic details, a brief description of the content and appropriate supplementary information should also be recorded.

8. Scan the text and find the sentences containing the words in capitals. The ability to choose the correct meaning of a word in a particular context is an important vocabulary skill which help you to understand and use correctly words you already know, and also to use a dictionary effectively. Paragraph number is given in brackets.

E.g. TO ASSESS
a. to calculate what something costs or is worth;
b. to consider a situation, person, or problem in order to make a judgement.
Answer: 2

1. REVIEW (1):

a) the process of studying or examining a situation, policy, or idea again in order to decide whether it is suitable or satisfactory;

b) an article in which someone gives their opinion of a play, book, art exhibition etc.;

c) a discussion of a particular subject that prepares you for a test.

2. TO REFINE (2):

a) to make some changes to something in order to improve it;

b) to remove things from a natural substance in order to make it pure.

3. TO HIGHLIGHT (2):

a) to report or describe something in a way that makes people notice it and think about it;

b) to make something easier to see;

c) to make parts of your hair a lighter colour by putting a chemical substance on them.

4. TO OVERLOOK (2):

a) to fail to notice or do something;

b) to choose to ignore a mistake, fault etc.;

c) to have a view of something from above.

5. TO APPROVE (3):

a) to have a positive feeling towards someone or something that you consider to be good or suitable;

b) to give official agreement or permission to something.

6. INDEX (6):

a) an alphabetical list of something such as subjects or names at the back of a book, that shows on which page they are mentioned;

b) a number that shows the price, value, or level of something compared with something else.

7. TO CONTRADICT (8):

a) to say that the opposite of what someone has said is true;

b) if one statement, piece of evidence, story etc contradicts another, they disagree and cannot both be true.

9. Complete the sentences with the words from exercise 8.

1. The Dow Jones _____ fell another 50 points yesterday.
2. Our results _____ the potential of adapting natural biomineralization processes to problems in materials sciences.
3. Her account of the accident _____ that of the other driver.
4. Our agent will _____ the value of your property.
5. The committee has agreed to undertake a _____ of the way in which public funds are being used.
6. By exploring and _____ paradigms of research, we are determining the background assumptions on which the search for the truth about language will proceed with increased understanding.
7. This old result is frequently _____in recent publications.
8. The test provides parents with a reliable _____ of their child's progress.
9. We tried to _____ his suitability for the job.
10. This year's budget package has been formally _____ by parliament.
11. Prof. Flinberg delayed publicizing his unusual results until the study passed peer _____**.**
12. His findings _____ the hypothesis.

PRACTICE ACTIVITIES

QUOTATIONS AND REFERENCING

Direct quotations and references to authors' writings are often included in research reports, dissertations and theses. They are included to show that you have read around the subject and are aware of what has been written about it.

Their purpose is also to demonstrate support for your own ideas, points of view and findings, and perhaps to show examples or evidence.

Quotations should not be overused: your own writing is more important. However, when you do include quotations they should be acknowledged with the correct reference conventions and listed at the end of your writing. It is important to acknowledge the source of the quotations otherwise you may be accused of plagiarism.

Quotations

When referring to a book or article, the normal procedure is to give the author's surname, the year of publication in brackets, and the page numbers if necessary. The full reference is then given at the end of the text.

There are two basic ways of using quotations.

1. Quotations marks (inverted commas) are put around the author's actual words, which are then incorporated in the text: this is often used for short quotations, e.g.

Academic writers need to be cautious in their claims. In this respect, vague language is important as 'it allows claims to be made with due caution, modesty, and humility' (*Hyland, 1994* : *241*)

2. The quotation is indented (it may be in a different type size or style; the quotation marks are usually omitted): this is normally used for longer quotations (three or more lines), e.g.

Jordan (*1977* : *240*) *also draws attention to the necessity for being careful*:

A feature of academic writing is the need to be cautious in one's claims and statements. In other words, you may indicate your certainty and commitment in varying degrees.

10. Define the purposes of using quotations in the following sentences:

a. support for an argument or point of view

b. exemplification of the point being made

c. introduction of a point or viewpoint

d. explanation of a point, item, etc

1. According to G. Cook, there are 'two approaches to language: sentence linguistics and discourse analysis' (Cook 1999: 12).

2. For example, they argue that ' learning strategies have to be learned in exactly the same way as other complex cognitive skills' (O'Malley, Chamot 1990: 52).

3. Thus, in contrast to American structuralist views on language, language was viewed as purposeful activity related to goals and situations in the real world. "The language which a person originates … is always expressed for a purpose" (Frisby 1957: 16).

4. R. Anderson explains that 'the move from declarative to procedural knowledge takes place in three stages: 1) the cognitive stage; 2) the associative stage; 3) the autonomous stage' (Anderson 1985: 232).

References and bibliographies

References, at the end of research report, for example, are arranged in alphabetical order (A-Z) of the author's surname or . If more than one reference is given by the same author, then the earlier dated reference will appear first. If two or more references by the same author appear in the same year, they will be labelled in sequence with letters (a, b, c, etc.) after the year. References to one author are normally listed before those of joint authorship of the same author. There are differences between references to books and references to journals.

Table 4.1. Bibliographic details required

Book	Journal
Author(s) – surname, first name initials	Author(s) – surname, first name initials
Year of publication (in brackets)	Year of publication (in brackets)
Title and subtitle of book (underlined or in italics)	Title of article
Edition	Title of journal (underlined or in italics)
Place of publication	Volume
Publisher	Part/ issue
	Page numbers (preceded by 'p.' for page or 'pp.' for pages)

11. Mark the following as either references to books or references to journals.

1. Hamp-Lyons, L. and K.B. Courter (1984). *Research Matters.* Cambridge: Newbury House.

2. Saunders, M.N.K. and Lewis, P. (1997). Great ideas and blind alleys? A review of the literature on starting research. *Management Learning*, 28:3, 283-99.

3. Hartley, J. and C..K. Knapper (1984). Academics and their Writing. *Studies in Higher Education*, 9(2).

4. Smith, F. (1982). *Writing and the Writer*. London: Heinemann Educational.

5. Storey, J., Cressey, P., Morris, T. and A. Wilkinson (1997). Changing Employment Practices in UK Banking: Case Studies. *Personnel Review*, Vol. 26 no 1, 24 – 42.

6. Raimond, P. (1993). *Management Projects*: *Design, Research and Presentation.* London: Chapman & Hall.

Latin words and abbreviations are often used in texts

Table 4.2. Latin words and abbreviations

Latin	short for…	English equivalent
c./ca.	Circa	about, approximately
cf.	confer	compare with
e.g.	exempli gratia	for example, for instance
et al	et alii	and others
etc.	et cetera	and the rest, and all others, and so on
Et seq.	et sequens	and the following pages
Ibid.	ibidem	in the same place (used to refer again to a text just referred to)
i.e.	id est	which is to say, in other words, that is
loc. cit.	loco citato	in the places already mentioned (+author's name)
N.B.	nota bene	take special note of; note well
op. Cit.	opera citato	in the work already mentioned (+ author's name and page reference)

Table 4.3. Common English abbreviations

Ed./Eds.	Editor(s); edited by; edition
ff.	and the following pages, lines, etc.
l./ll.	line(s)
ms./mss.	manuscript(s)
no./nos.	number(s)
p./pp.	page(s)
para./paras.	paragraph(s)
ref./refs.	reference(s)
vol./vols.	volume(s)

12. There are a number of errors in the bibliography below. These may be to do with the order of items or the omission of some details. Mark the places where the errors occur and then write a description of the error and what is needed to correct it (Jordan 1990: 99).

1. Abbott, G. (1981). Encouraging communication in English: a paradox. *ELT Journal.*

2. James, K. (1984a). The writing of theses by speakers of English as a Foreign Language: the results of a case study. In R. Williams, J. Swales and J. Kirkman (Eds.). *Common ground*: *shared interests in ESP and communication studies. ELT documents*: *117.*

3. James (1984b). *Speak to Learn.*

4. McDonough, J. (1984). *ESP in Perspective*: *A Practical Guide.* Collins ELT: London.

5. Mackay, R. & A. Mountford (Eds.) (1978). *English for Specific Purposes.* London: Longman.

6. Zamel, V. Responding to student writing. *TESOL Quarterly,* 19 (1).

7. Swales, J.M. (1995). The role of the textbook in EAP writing research. *English for Specific Purposes,* 14 (1).

8. Swales, J.M. and C.B. Feak (1994). *Academic Writing for Graduate Students.* Ann Arbor: University of Michigan Press.

13. Write a short bibliography for your subject, listing five to ten books and articles. Ensure that all details are correct.

CASE STUDY

THE PROBLEMS OF VALUING INTELLECTUAL CAPITAL

Geoff had decided to research how companies valued intellectual capital, and was very keen to get started. He began by contacting several big accountancy firms asking if they had any publications on this topic, and was pleased when they responded by sending material very quickly. He spent two full days in the university library, where he searched the

library's on-line catalogue and the *Financial Times* archive on line. He also tried using the Internet search engine Geoff, but he found over 700 000 hits relating to intellectual capital and realised that it would take years to read item all.

He arrived for his tutorial with the rile of material that he had collected as the foundation for his literature review. I his comprised photocopied extracts from some textbooks on financial reporting, the reports he had received from professional accountancy firms, and copies of articles from the *Financial Times.* Geoff showed his tutor how he had started writing his literature review. This summarised everything he had read so far in chronological order of publication, including extensive quotations from each source.

Geoff was disappointed that his tutor did not seem more enthusiastic about his progress. As they discussed the purpose of a literature review, Geoff commented "I've done a really thorough search, there's nothing else about intellectual capital in the library – I think I've read nearly everything written on the topic now!"

The tutor pointed out that, although Geoff had collected some relevant and up-to-date material, he had not looked into the academic literature. He therefore suggested two refereed journal articles that he should read. Geoff began to realise that the reading he needed to do was going to be very time consuming. His tutor gave him some advice on learning to skim texts to speed up the process and how to organise information efficiently, keeping careful notes on sources.

Geoff returned to the library and searched for the two refereed journal articles. One journal was in the library, but he had to request the second article through the inter-library loan service. He sat down to read the first article and discovered that some of the points that the author made had also appeared in the professional reports. He made some notes on these connecting ideas and began to think about the reasons why companies might want to put a value on intellectual capital, as well as the ways in which they might perform the calculations. The article contained references to books and other articles that dealt with this. Geoff noted their references in full so that he could obtain copies.

Over the next few weeks, Geoff concentrated on reading the academic literature. Many of the articles that he read contained references to the work of two particular researchers, so he looked for other published works by these people, who were clearly authorities in the area. The library staff helped him to use several electronic resources, including ABI-Inform and EBSCO, which provided speedy access to the articles he needed. Soon he was able to read quickly through a list of titles to pick out those relevant to his work, although the amount of material previously written on the subject seemed daunting. Talking to other students on his course, he found that they had similar concerns. One student said that she had collected so many references that she had decided to record everything she had read in a simple database. She showed Geoff how she had set this up, and he decided to copy the idea. He also began to organise his notes around themes that seemed to be repeated in the articles he was reading. Over time he began to realise that the practical issues, which had first attracted him to the topic, could be explained more clearly when they were placed in the theoretical context discussed in the academic literature.

Geoff was still worried that he hadn't located all the relevant literature. However, he was reassured by his tutor's comments after reading the first draft of his literature review. These emphasised that there was no need to read everything that had been written and that, although the structure of the review still needed further work, it provided a reasonable overview of current thinking. They discussed ways in which he could take a more critical approach to the literature and use this evaluation to support his arguments in a logical way. As part of the discussion Geoff's tutor asked him to select the article that he considered the most authoritative on the problems of valuing intellectual capital and then to explain why. This exercise helped Geoff to reorganise his material in a more focused way.

When he had completed the second draft of his review Geoff felt really pleased with it, and his tutor congratulated him on making excellent progress. He was even more enthusiastic about his project now that he could be confident about his basic understanding of the area and had identified specific issues to focus on.

14. Answer the questions:

1. How do you think Geoff's view of the purpose of undertaking a literature review changed?
2. What specific skills did Geoff develop in the course of preparing the review?
3. Why do you think Geoff's friend recorded everything she had read in a database rather than just those articles she felt would definitely be of use to her dissertation?
4. How could Geoff have made better use of Internet search engines in researching his topic?

PROGRESSING YOUR RESEARCH PROJECT

Critically reviewing the literature

- Consider your research questions and objectives. Use your lecture notes, course textbooks and relevant review articles to define both narrow and broader parameters of your literature search considering language, subject area, geographical area, publication period and literature type.
- Generate key words and search terms using one or a variety of techniques such as reading, brainstorming and relevance trees. Discuss your ideas widely, including with your project tutor and colleagues.

- Start your search using both database and printed tertiary sources to identify relevant secondary literature. Begin with those tertiary sources that abstract and index academic journal articles and books. At the same time, obtain relevant literature that has been referenced in articles you have already read.
- Expand your search via other sources such as the Internet and by browsing and scanning.
- Obtain copies of relevant items, read them and make notes. Remember also to record bibliographic details, a brief description of the content and supplementary information on an index card or in your reference database.
- Start drafting your critical review as early as possible keeping in mind its purpose.
- Continue to search the literature throughout your research project to ensure that your review remains up to date.

SELF-CHECK QUESTIONS

1. What does the process of critically reviewing the literature involve?
2. What is the main purpose of critical literature review?
3. What other purposes does the review state?
4. What do you need to include in your critical review?
5. Does the review imply that your ideas should extend, follow or approve those set out in the literature?
6. What is meant by 'critical' in the context of reviewing the literature?
7. What is the accepted structure of critical review?
8. What three categories can literature sources be divided?
9. What do primary literature sources include?
10. Why are secondary literature sources easier to locate?
11. What are tertiary literature sources designed for?
12. What does planning the literature search include?
13. What parameters of the literature obtained should be assessed?

GLOSSARY

allegiance n.	верность, преданность, лояльность
approve v.	одобрять, утверждать
biased a.	необъективный, тенденциозный, пристрастный
coherent a.	логически последовательный, согласованный
cohesive a.	связный
commence on v.	приступать к чему-либо, начинать
compilation n.	компиляция, объединение, составление
collation n.	сравнение, сопоставление
commitment n.	приверженность, взгляды, обязательства
confrontation n.	противостояние, противоречие
cover v.	покрывать, включать, содержать, охватывать, освещать (в печати)
currently adv.	в настоящее время, теперь
discredit v.	опровергнуть, показать несостоятельность
disputation n.	спор, дискуссия
distinguish v.	различать, проводить различие
draw out v.	набрасывать, составлять (документ), извлекать
enhance v.	увеличивать, усиливать, улучшать, повышать
exercise v.	использовать, осуществлять, упражнять(ся)
explicit a.	явный, точный, ясный
fault n.	дефект, ошибка, неисправность, повреждение
humility n.	сдержанность, умеренность, скромность
implicitly adv.	неявно, имплицитно; полностью, всецело
indent v.	делать абзац, отступ
index n.	указатель (предметный, алфавитный), каталог; показатель, признак, индекс
judgement n.	суждение, утверждение, оценка
locate v.	обнаруживать, определять местонахождение, размещать; классифицировать, систематизировать
merit n.	достоинство, положительное качество, заслуга
newsworthy a.	достойный освещения в печати, важный

occurrence n.	появление, распространение; случай, событие, явление
overlap v.	перекрывать, частично совпадать
overlook v.	не заметить, пропустить, просмотреть
plagiarism n.	плагиат
reasoned a.	обоснованный, разумный, мотивированный
reference n.	ссылка, сноска, отсылка, упоминание, отношение
relevance n.	относимость, значимость, важность, уместность
seek v.	добиваться, стремиться, искать
tertiary a.	относящийся к третьему рангу, классу; третичный

UNIT 5

DECIDING ON THE RESEARCH APPROACH AND CHOOSING A RESEARCH STRATEGY

The aims of this unit:

- to outline the key assumptions of research philosophies;
- to explain major differences between deductive and inductive approaches to research;
- to give information on a variety of research strategies;
- to analyze the concepts of validity and reliability of research.

FOCUS ON INFORMATION

1 Skim the text about the research approaches and strategies. Find an appropriate heading for each paragraph.

a. deduction: testing theory
b. different research strategies
c. research philosophies
d. induction: building theory
e. layers of the research process 'onion'
f. using multi-methods
g. credibility of research findings
h. time perspectives to research designs

1. The issues underlying the choice of data collection methods to answer your research question may be depicted by means of research 'onion' consisting of a number of important layers that need to be peeled away. The first of

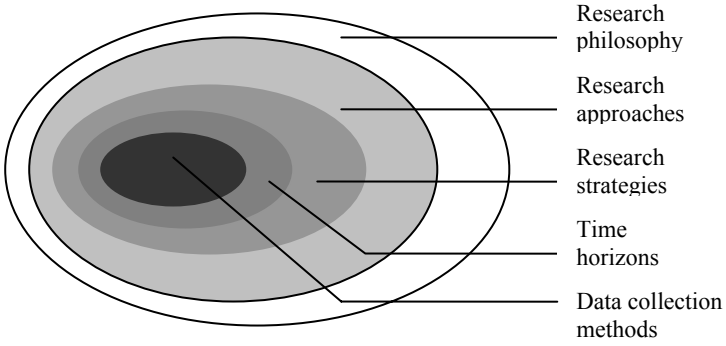


Figure 5.1. The research process 'onion'

these layers raise the question of the research philosophy you adopt. The second considers your research approach that flows from that philosophy. Third, we examine the research strategy, and the forth layer refers to the time horizons you apply to your research. In the centre of the 'onion' is the fifth layer, data collection methods.

2. Your research philosophy depends on your views about the way in which knowledge is developed and judged as being acceptable. Three main philosophical positions in relation to research are positivism, interpretivism and realism.

Positivism is the research philosophy that involves working with an observable social reality. The emphasis is on highly structured methodology to facilitate replication, and the end product can be law-like generalizations similar to those produced by the physical and natural scientists. The researcher in this tradition assumes the role of an objective analyst, coolly making interpretations about those data that have been collected.

Interpretivism is the research philosophy that requires the researcher to seek to understand the subjective reality and meanings of participants.

People may place many different interpretations on the situations in which they find themselves. These different interpretations are likely to affect their actions and the nature of their social interaction with others. In this sense, people not only interact with their environment, they also seek to make sense of it through their interpretation of events and the meanings that they draw from these. In turn their own actions may be seen as being meaningful in the context of these socially constructed interpretations and meanings. The role of the interpretivist is to seek to understand the subjective reality of those that they study in order to be able to make sense of and understand their motives, actions and intentions in a way that is meaningful for these research participants.

Realism is based on the belief that a reality exists that is independent of human thoughts and beliefs. Realism is the research philosophy that seeks to understand the existence of an external and objective reality that influences people's social interpretations and behaviours but which may not be perceptible to them. It recognises that people themselves are not objects to be studied in the style of natural science.

3. The two main approaches to research are deductive and inductive. *Deductive approach* involves the development of a theory that is subjected to a rigorous test. As such it is the dominant research approach in the natural sciences.

There are five stages through which deductive research will progress:

1) deducing a *hypothesis* (a testable proposition about the relationship between two or more events or concepts) from the theory;

2) expressing the hypothesis in operational terms (that is, ones indicating exactly how the variables are to be measured), which propose a relationship between two specific variables;

3) testing this operational hypothesis (this will involve an experiment or some other form of empirical inquiry);

4) examining the specific outcome of the inquiry (it will either tend to confirm the theory or indicate the need for its modification);

5) if necessary, modifying the theory in the light of the findings.

There are several important characteristics of the deductive approach. First, there is *the search to explain causal relationships between variables*. To test the hypothesis you utilize another characteristics, *the collection of quantitative data*. A further important characteristic is *controls to allow the testing of hypotheses*, that is ways of being sure that the outcome being measured (the dependent variable) is caused by the predicted phenomena alone (the independent variable) rather than unpredicted variables. In order to pursue the principle of scientific rigour, the deductive approach dictates that the researcher should be independent of what is being observed. An additional important characteristic of deduction is that concepts need to be *operationalised* in a way that enables facts to be measured quantitatively. *Reductionism* is the next important principle which holds that problems as a whole are better understood if they are reduced to the simplest possible elements. The final characteristic of the deductive approach is *generalization* – the making of more widely applicable propositions based upon the process of deduction from specific cases.

4. The emergence of the social sciences in the 20th century led social science researchers to be wary of the deductive approach. They were critical of an approach that enabled a cause-effect link to be made between particular variables without an understanding of the way in which humans interpreted their social world. Developing such an understanding is, of course, a strength of *inductive research*.

In an *inductive approach* theory would follow data rather than vice versa as in the deductive approach. Research using the inductive approach would be particularly concerned with the context in which such events were taking place. Researchers in this tradition are more likely to work with qualitative data and to use a variety of methods to collect these data in order to establish different views of phenomena.

5. *Research strategy* is a general plan of how you will go about answering the research question(s) you have set. It will contain clear objectives, derived from your research question(s), specify the sources from which you intend to collect data, and consider the constraints that you will inevitably have (for example access to data, time, location and money, ethical issues). The main research strategies are experiment, survey, case study, grounded theory, ethnography, action research.

Experiment is a classical form of research that owes much to the natural sciences, although it features strongly in much social science research, particularly psychology. It will involve typically:

- definition of a theoretical hypothesis;
- selection of samples of individuals from known populations;
- allocation of samples to different experimental conditions;
- introduction of planned change on one or more of the variables;
- measurement on a small number of the variables;
- control of other variables.

The *survey* strategy is usually associated with the deductive approach. It is a popular and common strategy in business and management research. Surveys allow the collection of a large amount of data from a sizable population in a highly economical way. Often obtained by using a questionnaire, these data are standardized, allowing easy comparison. In addition, the survey strategy is perceived as authoritative by people in general. This is because it is easily understood. Every day a newspaper reports the results of a new survey that indicates, for example, that a certain percentage of the population thinks or behaves in a particular way.

C*ase study* is a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence. This strategy will be of particular interest to you if you wish to gain a rich understanding of the context of the research and the process being enacted. The case study strategy also has considerable ability to generate answers to the question 'why?' as well as 'what?' and 'how?' questions. The data collection methods employed may be various. They may include questionnaires, interviews, observation, documentary analysis.

Grounded theory is often thought of as the best example of the inductive approach, although this conclusion would be too simplistic. It is better to think of it as 'theory building' through a combination of induction and deduction. In grounded theory, data collection starts without the formation of an initial theoretical framework. Theory is developed from data generated by a series of observations. These data lead to the generation of predictions that are then tested in further observations which may confirm, or otherwise, the predictions. Constant reference to the data to develop and test theory leads us to understanding grounded theory as an inductive/deductive approach.

Ethnography is also firmly rooted in the inductive approach. It emanates from the field of anthropology. The purpose is to interpret the social world the research subjects inhabit in the way in which they interpret it. This is obviously a research strategy that is very time consuming and takes place over an extended time period. The research process needs to be flexible and responsive to change since the researcher will constantly be developing new patterns of thought about what is being observed.

Action research is a strategy which is concerned with a management of a change and involving close collaboration between practitioners and researchers. Action research differs from other forms of applied research because of its explicit focus on action, in particular promoting change within the organization. Its purpose is not just describe, understand and explain the world but also to change it.

6. Regardless of the strategy you are pursuing your research may be either cross-sectional or longitudinal.

Cross-sectional research is the study of a particular phenomenon at a particular time, i.e. a 'snapshot'. *Longitudinal study* is the study of a particular phenomenon over an extended period of time.

Cross-sectional studies often employ the survey strategy. They may describe the incidence of a phenomenon (for example, a survey of the IT skills possessed by managers in one organization at a given point of time). The main strength of longitudinal research is the capacity that it has to study change and development For example, you may be studying the change in manufacturing processes in one company over a period of year. This would be a longitudinal case study.

7. It would be misleading to think that research approaches and strategies exist in isolation. Not only is it perfectly possible to combine them within the same piece of research, but it is often beneficial to do so.

The first major advantage of employing multi-methods in the same study is that different methods can be used for different purposes in a study. You may wish to employ, for example, interviews, in order to get a feel for the key issues before embarking on a questionnaire.

The second advantage of combining methods is that it enables triangulation to take place. It means the use of two or more dependent sources of data or data collection methods within one study in order to ensure that data are telling you what you think they are telling you.

8. Two particular emphases on research design should be paid attention to: reliability and validity.

Reliability can be assessed by posing the following three questions:

1) will the measures yield the same results on other occasions?

2) will similar observations be reached by other observers?

3) is there transparency in how sense was made from the raw data?

Validity is assessed by the extent to which:

1) data collection method or methods accurately measure what they were intended to measure;

2) research findings are really about what they profess to be about;

3) your findings may be equally applicable to other research settings, i.e. the extent to which they are generalisable.

2. Read the text and transfer essential data on the research philosophies, approaches and strategies into the scheme below. The beginning has been done for you.

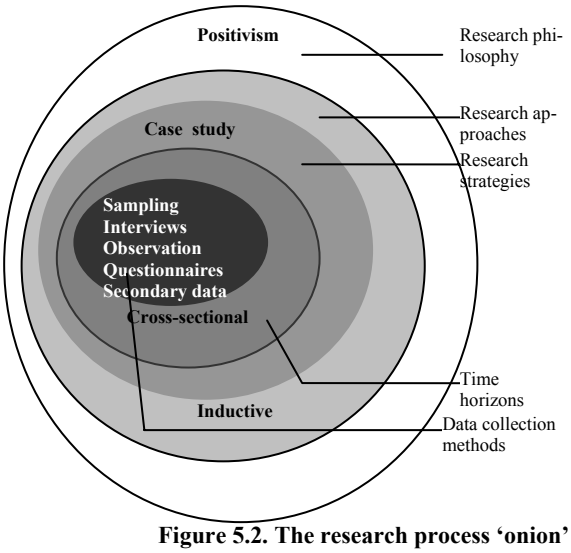


Figure 5.2. The research process 'onion'

3. Match terms in column A with their definitions in column B.

A	B
1. deductive approach	a. Research philosophy that requires the researcher to seek to understand the subjective reality and meanings of participants.
2. inductive approach	b. General plan of how the researcher will go about answering the research questions.
3. positivism	c. Research approach involving the testing of a theoretical proposition by the employment of a research strategy specifically designed for the purpose of its testing.
4. interpretivism	d. The use of two or more independent sources of data within one study in order to help ensure that the data are telling you what you think they are telling you.
5. dependent variable	e. Research approach involving the development of a theory as a result of the observation of empirical data.
6. realism	f. Research strategy that involves the definition of a theoretical hypothesis; the selection of samples; the allocation of samples to different experimental conditions; the introduction of planned change on one or more of the variables; and measurement on a small number of variables and control of other variables.
7. triangulation	g. Research philosophy that involves working with an observable social reality. The end product can be law-like generalizations similar to those produced by the physical and natural scientists.
8. research strategy	h. Variable that changes in response to changes in other variables.
9. experiment	i. Research philosophy that believes in, and seeks to understand, the existence of an external and objective reality that influences people's social interpretations and behaviours but which may not be perceptible to them. It recognizes that people themselves are not objects to be studied in the style of natural sciences.

4. Put a tick in the appropriate column to show the major differences between deductive and inductive approaches to research.

Major characteristics of deductive and inductive approaches	Deductive approach	Inductive approach
emphasis on scientific principles		
moving from theory to data		
the collection of qualitative data		
less concern with the need to generalise		
the need to explain causal relationships between variables		
the necessity to select samples of sufficient size in order to generalize conclusions		
a realization that the researcher is the part of the research process		
the application of controls to ensure validity of data		
researcher independence of what is being researched		
the operationalisation of concepts to ensure clarity of definition		
emphasis on gaining an understanding of the meanings humans attach to events		
the collection of quantitative data		
a close understanding of the research context		

FOCUS ON LANGUAGE

5. Find in the text English equivalents of the following Russian word combinations. The paragraph numbers are given in brackets.

вопросы, лежащие в основе выбора методов (1)	
исследовательский подход (1)	
способ, которым формируются знания (2)	
понимать действительность путём интерпретации событий (2)	
подвергать строгой проверке (3)	
причинно-следственная связь между переменными (3)	
следовать принципу научной точности (3)	
учитывать ограничивающие условия (5)	
быть отличительным признаком, характеризовать (5)	
реагирующий на изменения (процесс исследования) (5)	
метод конкретных ситуаций (5)	
опрос (5)	
анкета, вопросник (5)	
исследование в целях выработки мер (5)	
моментальный снимок (6)	
сфера действия (охват) явления (6)	
преимущество сочетания нескольких методов (7)	
надёжность результатов исследования (8)	
обоснованность исследования (8)	

6. Read the text below. Use the word given in capitals at the end of each line to form a word that fits in the space in the same line. There is an example at the beginning (0).

PRACTIONER-RESEARCHER	
Being involved in 0) <u>pursuing</u> research in your own organization you adopt the role of the practitioner-researcher. One of the advantages of this approach is your	PURSUE

1)_____ of the organization and understanding of the 2) _____ of what goes on in it. It is not necessary to spend a good deal of 3) _____ time in learning the context in the same way as the outsider does. How- ever, that advantage carries with it a 4) _____ disadvantage. You must be very conscious of the	KNOW COMPLEX VALUE SIGNIFICANCE

PRACTIONER-RESEARCHER	
5) _____ and preconceptions that you carry around with you. This is an inevitable consequence of knowing the 6) _____ well. It can prevent you from exploring issues that would 7) _____ the research. 8) _____ has other problems. As prac- titioner-researcher you will be less likely to ask 'basic' questions revealing the 9) _____ about the organization because you would feel that you should u know the answers already. A more practical problem is that of time. Combin- ing two roles at work is 10) _____ demand- ing as it may involve you in much data 11) _____ 'after hours'. This activity is hidden from those who determine your workload. They may not appreciate the demands that your 12) _____ role is making on you. There are no easy answers to these problems. All you can do is to be aware of the threats to the 13) _____ of your data by being too close to your research setting. As will now be obvious to you, all methods have their 14) _____ and weaknesses.	ASSUME ORGANISE RICH FAMILIAR IGNORE OBVIOUS RECORD RESEARCH QUALIFY STRONG

7. One of the key words of this unit is the word "approach". Like many English words it has more than one meaning, depending on the context.

Besides the noun "approach" can be converted into the verb "approach" conveying related meanings.

As a noun it can denote:

a. a particular way of thinking about or dealing with something
b. the fact of coming closer in time or in distance
c. a path or road that leads to a place:
d. the action of starting to speak or write to someone when you are asking for something or making an offer

As a verb it means:

e. to move closer to someone or something
f. to speak to someone about something for the first time, especially in order to ask for help or make an offer
g. to almost reach a particular level, number, or condition
h. to deal with a situation or problem in a particular way

Read and translate the sentences matching dictionary definitions of the word "approach" with its meanings in context.

1. This method opens up broad perspectives for fruitful interaction between the synchronic and diachronic *approaches* to language.
2. With the *approach* of war, many children were evacuated.
3. The company has made some *approaches* to the government.
4. I have already *approached* my boss about a pay rise.
5. They played in temperatures *approaching* 40 degrees.
6. The plane crashed during its final *approach* into the airport.
7. We need a fresh *approach* to sports in education.
8. A science of computation is emerging that someday may lead to large-scale information-processing systems that *approach* the efficiency and robustness of neural systems.
9. Governments tend to *approach* the issue from different angles.
10. She heard footsteps *approaching* from behind.

8. Choose from sentences a–g the one which fits each gap 1-5. There is one extra sentence which you do not need to use.

a. It depends on whether you want your research to be a "snapshot" taken at a particular time or to be akin to a "diary", i.e. representation of events over a given period.

b. They are different views about the way in which knowledge is developed and judged.

c. You can use both in combination on the same research project.

d. You should always think carefully about the ethical issues implied by the choice of your research strategy.

e. Structured observation and structured interviews, where standardized questions are asked of all interviewees also often fall into this strategy.

f. This means that your results should be valid and reliable.

g. They are general plans of how the researcher will go about answering the research questions.

1. Three main philosophical positions in relation to research are positivism, interpretivism and realism. _____.
2. The two main approaches to research are deductive and inductive. _____. The main influence on your choice of research approach should be your research questions and objectives.
3. Research projects may be cross-sectional or longitudinal. _____ .
4. The main research strategies are experiment, survey, case study, grounded theory, ethnography. _____.
5. You should take care to ensure that your results are really about what they appear to be about. _____.
6. The questionnaire is not the only data collection method that belongs to the survey strategy. _____ .

PRACTICE ACTIVITIES

9. Read and analyze the text about combining survey and case study methods as a worked example illustrating using multi-methods. Be ready to answer the following questions:

1. Where did the research take place?
2. What stages did the research consisted of?
3. What qualitative and quantitative methods did the researches employ?
4. What was the purpose of unstructured (in-depth) interview with senior managers?
5. What procedure helped researchers to find out the issues which were important to staff?
6. Whom did discussion groups represent?
7. What sort of data did the researchers get by using a questionnaire?
8. Why was the questionnaire complemented by semi-structured group interviews with representative employee groups?

We conducted an employee attitude survey in a small insurance company, which used three different types of method. Two of these methods were qualitative and one was quantitative. The research consisted of four stages:

1. In-depth interviews with senior managers in order to get a picture of the important issues we were likely to encounter in the research.
2. Discussion groups with six to ten employees representing different grades and occupations in the company. This was to establish the types of issues that were important to staff. This would inform the content of the questionnaire.
3. A questionnaire that was administered to 100 of the 200 head office employees. We wanted to get the sort of data that would allow us to compare the attitudes of different employee groups: by age, gender, length of service, occupation and grade. This was particularly important to the company.
4. Semi-structured group interviews with representative employee groups to clarify the content of some of the questionnaire results. This was essential to get at the meeting behind some of the data.

10. Look through the text again and find the words which mean the same.

a) an assessment of the opinions and morale of the employees. It is performed anonymously in the form of a self-completion questionnaire

b) unstructured and informally conducted interview that may commence with one or more themes to explore with participants but without a predetermined list of questions to work through

c) data collection technique in which each person is asked to respond to the same set of questions in a predetermined order

d) wide-ranging category of interview in which the interview commences with a set of interview themes but is prepared to vary the order in which questions are asked and to ask new questions in the context of the research situation.

CASE STUDY

EMBEDDED QUALITY AT ZARLINK SEMICONDUCTOR

Mick is a project manager at Zarlink, a multinational manufacturer of semiconductors for a variety of high-technology military, medical and consumer applications. Mick is also a part-time MBA student at his local university. As part of his MBA Mick has to complete a dissertation on a management topic of his choice. Since Mick had recently been selected to embed a new quality management system called TS 16949 into his manufacturing site at Swindon in the West of England it seemed sensible that he chose to study quality for his dissertation. Mick's particular fascination was his firm belief that the route to high-quality process in organisations was not through introducing specific techniques but through ensuring that quality was embedded in everything done at Zarlink: part of the lifeblood of the organisation. "Quality is even about more than people's attitudes" said Mick; "it's about their beliefs. Quality must be a way of life and dominate the thoughts of everyone in the organisation, irrespective of their job." Mick wanted to use his dissertation as a way not only of obtaining his MBA but also of learning how he could be more effective in introducing embedded quality at Swindon.

Mick started off his research by searching the quality literature. There was no shortage of this. But soon Mick realised that he was concerned with that branch of the quality literature that dealt with the 'soft' issues of organisational culture change. He became rather disenchanted with much of the literature because it was largely prescriptive. "I was dubious about a lot of what the gurus were saying," said Mick. "They seemed to be saying that if you get your employees to believe this and do that then everything will be fine. I was sceptical of this because I knew through my MBA studies that the success of certain techniques is usually contingent upon the individual circumstances of the organisation." Nonetheless Mick became attracted to the idea that embedding certain core values in the organisation was a good way of achieving quality goals. The problem was that he did not know which core values were appropriate for his site. Therefore his research question became: "What are the core values that need to be adopted in Zarlink, Swindon, if embedded quality is to become a success?"

More specifically, Mick's **research objectives** were:

1) to identify general constructs that constitute "embedding quality" within an organisation;

2) to compare these beliefs with those espoused by a sample from the senior Zarlink management team;

3) to establish the behaviours and attitudes of the current workforce towards the quality management system at the Zarlink foundry, Swindon;

4) 4 to propose a framework of core values to facilitate the embedding of quality into Zarlink, Swindon.

Having used the literature to refine his research question and objectives Mick then turned his attention to collecting primary data within Zarlink. Initially he thought of using a positivist approach based on a questionnaire using qualitative data, but discussions with Philippa, his tutor, convinced him that there were other ways of collecting data. Mick began to think more deeply about his research strategy, and thought that the advantage of triangulating his data by using multi-method would convince not only his examiners that his data were valid but also the managers at Zarlink who he was hoping would give him the go-ahead to introduce his ideas.

Mick's first research objective had been met by his coverage of the literature. This had been useful in concentrating his mind on embedded quality, but it only took him a limited way. The second and third objectives would lead to a much more meaningful management dissertation.

The second objective involved conducting interviews with key managers in order to "test" the ideas that Mick had developed about core values as a result of the literature review. The managerial sample he chose comprised managers from other Zarlink sites in the world who had an excellent reputation for embedding quality. At the same time Mick thought it important to include those managers who were concerned with implementing quality at Swindon. Mick conducted six interviews across three sites: one in Canada and one in southern England in addition to the third in Swindon. In each site he interviewed the foundry director and the quality manager. These were the key managers concerned with quality. The non-Swindon managers were interviewed by telephone, and the Swindon managers were interviewed face to face by Mick. He hoped this phase of data collection would give him a very clear idea of Zarlink's view of quality.

In order to meet the third objective he decided to collect data in two ways. The first was to conduct what he called a 'gap analysis'. The purpose of this was to establish the current behaviours concerned with quality – that is, what people actually did in their working lives. This would tell Mick what was being done well and what was being done badly, or not at all, and therefore identify what needed to be done to embed quality. In order to do this Mick designed an audit form based on a purpose-made audit that had been used before in similar organisations. This was administered in all departments of Zarlink, Swindon. Ten of Mick's colleagues were responsible for carrying out the audit. This involved Mick in training them in its use in order to achieve reliability. Mick was opportunistic in the second way he collected data in respect of the third objective. He was fortunate that a general employee attitude survey was imminent. He decided to insert a subsection in this survey that consisted of questions to establish employees' attitudes to quality. This went to each of the 130 employees at Swindon.

Mick was confident that his research strategy would yield rich, valid and reliable data on management beliefs and employee attitudes and practice, which would enable him to propose a framework of core values to facilitate the em-

bedding of quality into Zarlink, Swindon. This would enable him to make a valuable contribution to the well-being of Zarlink and pass his MBA!

11. Answer the questions:

1.Which type(s) of research strategy is Mick employing?
2. In what other ways could Mick have used the literature to refine his research question?
3. In what other ways might Mick have achieved his research aim?
4. What are the benefits of using multiple methods of data collection?
5. What threats to validity are inherent in the research design, and how may these be overcome?

PROGRESSING YOUR RESEARCH PROJECT

Deciding on your research design

- Return to your research question(s) and objectives. Decide on whether you intend to pursue a deductive (your theory will be tested by observation) or an inductive (the collection of your data will be followed by the development of theory) approach. Explain clearly why you have decided on the approach chosen.
- Decide which of the research strategies is most appropriate for your research question(s) and objectives. Look at studies in the literature that are similar to your own. Which strategies have been used? What explanations do the researchers give for their choice of strategy?
- Prepare notes on the constraints under which your research is being conducted. Do they, for example, preclude the pursuit of longitudinal research?
- How may you combine different research methods in your study? Make notes on the advantages such a multi-method approach would bring.
- List all the threats to reliability and validity contained in your research design.

SELF-CHECK QUESTIONS

1. What are the key assumptions of the positivist, interpretivist and realist research philosophies?
2. What do deductive and inductive approaches differ in?
3. What is a research strategy?
4. What are the main research strategies?
5. Which of the strategies are associated with deductive approach?
5. What are the benefits of adopting a multi-method approach?
6. What factors determine the choice of longitudinal study?
7. Why should you take care that your results are valid and reliable?

GLOSSARY

applicable a.	применимый, подходящий, пригодный
authoritative a.	влиятельный, авторитетный; надёжный, властный
cater v.	обеспечивать, обслуживать, угождать
constraint n.	ограничение, ограничивающее условие
cross-sectional a.	поперечно-рассечённый, поперечный
deduce v.	выводить, сделать вывод, прийти к заключению
emanate v.	происходить, исходить, истекать
embark v.	начинать, приступать
emergence n.	выход; появление
evidence n.	признак, симптом; факты, данные; доказательство, подтверждение, свидетельство
exploratory a.	исследующий; исследовательский
external adj.	внешний, наружный, поверхностный
facilitate v.	облегчать, содействовать, способствовать, помогать
feature v.	являться характерной чертой, отличительным признаком; отличать, характеризовать
frame v.	создавать, вырабатывать, составлять
incidence n.	сфера действия, охват, степень; процент, доля
inquiry n.	исследование, изучение
longitudinal a.	продольный
misleading a.	вводящий в заблуждение, обманчивый
multiple a.	разнообразный, разнородный; многочисленный
owe v.	быть обязанным, приписывать (открытие и т.д.)
perceptible a.	заметный, ощутимый, понятный, постижимый

perceive v.	воспринимать, понимать, осознавать; постигать
perspective n.	проекция, вид, ракурс, аспект
profess v.	заявлять, утверждать, открыто признавать
proposition n.	предложение, утверждение, суждение
reduce v.	сокращать, преобразовывать; приводить к более простому виду, к общему знаменателю и т.п.;
replication n.	копирование, дублирование, повторение опыта
responsive a.	отзывчивый, чуткий, поддающийся (влиянию)
rigour n.	точность, строгость
rigorous a.	доскональный, скрупулезный, тщательный
snapshot n.	моментальный снимок, мгновенная фотография
subject v.	подвергать (воздействию, влиянию и т. п.)
survey n.	опрос, обзор, обозрение
triangulation n.	триангуляция

UNIT 6
COLLECTING AND ANALYZING DATA

The aims of this unit:

- to give you information on a variety of data collecting techniques;
- to enable you to evaluate suitable data collecting techniques for answering research questions and meeting objectives;
- to help you understand advantages and disadvantages of different data collection methods;
- to inform you on the basic techniques of analysing quantitative and qualitative data.

FOCUS ON INFORMATION

1. Skim the text about collecting and analyzing data. Find an appropriate heading for each paragraph.

a. using secondary data
b. collecting data through observation
c. sampling techniques
d. analyzing quantitative data
e. collecting data using interviews
f. analyzing qualitative data
g. using questionnaire techniques

1. Whatever your research questions and objectives you will need to collect data to answer them. Sampling techniques provide a range of methods that enable you to reduce the amount of data you need to collect by considering only data from a subgroup rather than all possible *cases* or *elements*.

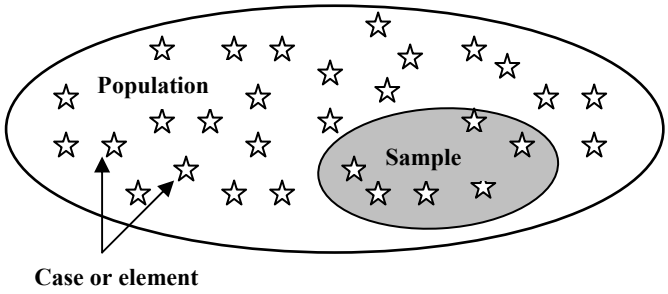


Figure 6.1. Population, sample and individual case

The full set of cases from which a sample is taken is called the *population.* In sampling, the term 'population' is not used in its normal sense, as the full set of cases need not necessarily be people. For research to establish the normal 'life' of a long-life battery produced over the past month by a particular manufacturer, the population from which you would select your sample would be all long-life batteries produced over the past month by that manufacturer.

Sampling provides a valid alternative to census when:

- it would be impracticable for you to survey the entire population;
- your budget and/or time constraints prevent you from surveying the entire population;
- you have collected all the data but need the results quickly.

The sampling techniques can be divided into two types:

– probability or representative sampling;
– non-probability or judgemental sampling.

Choice of sampling technique or techniques is dependent on your research question(s) and objectives:

– probability samples are required if you need to estimate statistically the characteristics of the population from a sample;
– if you do not require such generalisations you can make use of non-probability sampling techniques.

Factors such as the confidence that is needed in the findings, accuracy required and likely categories for analyses will affect the size of the sample that needs to be collected:

– statistical analyses usually require a minimum sample size of 30;
– research question(s) and objectives that do not require statistical estimation may need far smaller samples.

Sample size and the technique used are also influenced by the availability of resources, in particular financial support and time available to select the sample and to collect, enter into a computer and analyse the data.

Probability sampling techniques all necessitate some form of sampling frame, so they are often more time consuming than non-probability techniques. Sampling frame is the complete list of all the cases in the population, from which a probability sample is drawn. Where it is not possible to construct a sampling frame you will need to use non-probability sampling.

2. If your research question(s) and objectives are concerned with what people do, an obvious way in which to discover this is to watch them do it. This is essentially what *observation* involves: the systematic observation, recording, description, analysis and interpretation of people's behaviour.

There are two types of observation. *Participant observation* is qualitative and is concerned with discovering the meanings that people attach to their actions. By contrast, *structured observation* is quantitative and is more concerned with the frequency of those actions.

Participant observation is a method in which the researcher participates in the lives and activities of those whom they are studying. It is used to attempt to get to the root of 'what is going on' in a wide range of social settings. Participant observation means that you adopt a number of potential roles differentiated by the degree to which your identity is concealed from the subjects of the research and the degree to which you participate in the events you are studying. Participant observation must avoid the trap of mere storytelling, its purpose is to develop theory. A prevalent form of data analysis used here is analytic induction. This may lead to an initial hypothesis being redeveloped more than once.

Structured observation is concerned with the frequency of events. It is characterised by a high level of predetermined structure and quantitative analysis. A choice may be made between 'off-the-shelf' coding schedules and a schedule that you design for your own purpose. Alternatively you may decide to use a 'hybrid'. The main threats to reliability and validity inherent in structured observation are subject error, time error and observer effects.

3. Data that have already been collected for some other purpose, perhaps processed and subsequently stored, are termed secondary data. There are three main types of secondary data: documentary, survey and those from multiple sources. Documentary secondary data include both written (such as notices, correspondence, minutes of meetings, reports to shareholders, diaries and transcripts of speeches) and non-written documents (like tape and video recordings, pictures, films and television programs, DVDs and CDs).

Any secondary data you use will have been collected for a specific purpose. This purpose may not match that of your research. In addition, the secondary data are likely to be less current than any data you collect yourself. Finding the secondary data you require is a matter of detective work. This will involve you in establishing whether the sort of data that you require are likely to be available and locating the precise data.

4. An interview is a purposeful discussion between two or more people. The use of interviews can help you to gather valid and reliable data that are relevant to your research question(s) and objectives.

Interviews may be highly formalized and structured, using standardized questions for each respondent, or they may be informal and unstructured conversations. In between there are intermediate positions. One typology that is commonly used is thus related to the level of formality and structure, whereby interviews may be categorized as one of:

– structured interviews;
– semi-structured interviews;
– unstructured interviews.

Another typology differentiates between standardized interviews and

non-standardised interviews. The third typology differentiates between respondent interviews and informant interviews.

Structured interviews use questionnaires based on a predetermined and *standardized* or identical set of questions. By comparison, semi-structured and unstructured interviews are *non-standardised*. In *semi-structured interviews* the researcher will have a list of themes and questions to be covered, although these may vary from interview to interview. *Unstructured interviews* are informal. You would use these to explore in depth a general area in which you are interested. These interviews are referred to as *in-depth interviews*. There is no predetermined list of questions to work through in this situation, although you need to have a clear idea about the aspect or aspects that you want to explore. The interviewee is given the opportunity to talk freely about events, behaviour and beliefs in relation to the topic area, so that this type of interaction is sometimes called *non-directive.* It has been labelled as an *informant interview* since it

is the interviewee's perceptions that guide the conduct of the interview. In comparison, a *respondent interview* is one where the interviewer directs the interview and the interviewee responds to the questions of the researcher.

Interviews may be conducted on a one-to-one basis, between you and a *single* participant. Such interviews are most commonly conducted by meeting your participant 'face to face', but there may be some situations where you conduct an interview by telephone. There may be other situations where you conduct a semi-structured or in-depth interview on a group basis, where you meet with a small number of participants to explore an aspect of your research through a group discussion that you facilitate.

5. Questionnaire is a general term including all data collection techniques in which each person is asked to respond to the same set of questions in a predetermined order.

The design of a questionnaire differs according to how it is administered, and in particular the amount of contact you have with the respondents. *Self-administered questionnaires* are usually completed by the respondents. Such questionnaires are delivered and returned electronically using either email or the Internet (*on-line questionnaires*), posted to respondents who return them by post after completion (*postal* or *mail questionnaires*), or delivered by hand to each respondent and collected later (*delivery and collection questionnaires*). Responses to *interviewer-administered questionnaires* are recorded by the interviewer on the basis of each respondent's answers. A growing number of surveys, particularly in the area of market research, contact respondents and administer questionnaires using the telephone. These are known as *telephone questionnaires*. The final category, *structured interviews* (sometimes known as *interview schedules*), refers to those questionnaires where interviewers physically meet respondents and ask the questions face to face. These differ from semi-structured and in-depth interviews, as there is a defined schedule of questions, from which interviewers should not deviate.

Prior to designing a questionnaire, you must know precisely what data you need to collect to answer your research question(s). The validity and reliability of the data you collect depend largely on the design of your questions, the structure of your questionnaire, and the rigour of your pilot testing. When designing your questionnaire you should consider the wording of individual questions prior to the order in which they appear. Questions can be divided into open and closed. The six types of closed questions are list, category, ranking, rating (scale), quantity and grid. Wherever possible closed questions should be pre-coded on your questionnaire to facilitate analysis. The order and flow of questions in the questionnaire should be logical to the respondent. This can be assisted by filter questions and linking phrases. The questionnaire should be laid out so that it is easy to read and the responses are easy to fill in.

Questionnaires must be introduced carefully to the respondent to ensure a high response rate. For self-administered questionnaires this should take the form of a covering letter; for interviewer-administered questions it will be done by the interviewer. All questionnaires should be pilot tested prior to collecting data to assess the validity and likely reliability of the questions. Administration of questionnaires needs to be appropriate to the type of questionnaire.

6. Virtually all research will involve some numerical data or contain data that could usefully be quantified to help you answer your research question(s). Quantitative data refers to all such data and can be a product of all research strategies. To be useful these data need to be analysed and interpreted.

Data for quantitative analysis can be collected and subsequently coded at different levels of numerical measurement. The data type (precision of measurement) will constrain the data presentation, summary and analysis techniques you can use.

Data are entered for computer analysis as a data matrix in which each column usually represents a variable and each row a case. Your first variable should be a unique identifier to facilitate error checking.

All data should, with few exceptions, be recorded using numerical codes to facilitate analyses. Where possible you should use existing coding schemes to enable comparisons.

For primary data you should include pre-set codes on the data collection form to minimise coding after collection. For variables where responses are not known you will need to develop a codebook after data have been collected for the first 50 to 100 cases. You should enter codes for all data values including missing data. The data matrix must be checked for errors.

Your initial analysis should explore data using both tables and diagrams. Your choice of table or diagram will be influenced by your research question(s) and objectives, the aspects of the data you wish to emphasise, and the level of measurement at which the data were recorded. This may involve using:

- tables to show specific values;
- bar charts, multiple bar charts and histograms to show highest and lowest values;
- line graphs to show trends;
- pie charts and percentage component bar charts to show proportions;
- box plots to show distributions;
- scatter graphs to show relationships between variables.

Subsequent analyses will involve describing your data and exploring relationships using statistics, such as:

- the mean, median and mode to describe the central tendency;
- the inter-quartile range and the standard deviation to describe the dispersion;
- chi square to test whether two variables are significantly associated;

– Kolmogorov-Smirnov to test whether the values differ significantly from a specified population;
– correlation and regression to assess the strength of relationships between variables;
– regression analysis to predict values.

7. Qualitative data are based on meanings expressed through words. They result in the collection of non-standardised data that require classification and are analysed through the use of conceptualisation.

The process of qualitative analysis generally involves the development of data categories, allocating units of your original data to appropriate categories, recognising relationships within and between categories of data, and developing and testing hypotheses to produce well-grounded conclusions.

There are a number of aids that you might use to help you through the process of qualitative analysis, including interview, observation, document and interim summaries, self-memos and maintaining a researcher's diary.

Different qualitative analytical strategies can be identified, related to using either a deductively based or an inductively based approach to research. The use of these different strategies has implications for the procedures involved in the analysis of qualitative data.

Quantifying some categories of qualitative data may help you to analyse this.

The use of computer-assisted qualitative data analysis software can help you to perform four basic and useful functions during qualitative analysis, related to project management, coding and retrieval, data management, and hypothesis building and theorizing.

2. Figure 6.2. demonstrates a variety of data collecting techniques. Fill in the spaces in the network using information from the text. Some spaces are already filled to help you.

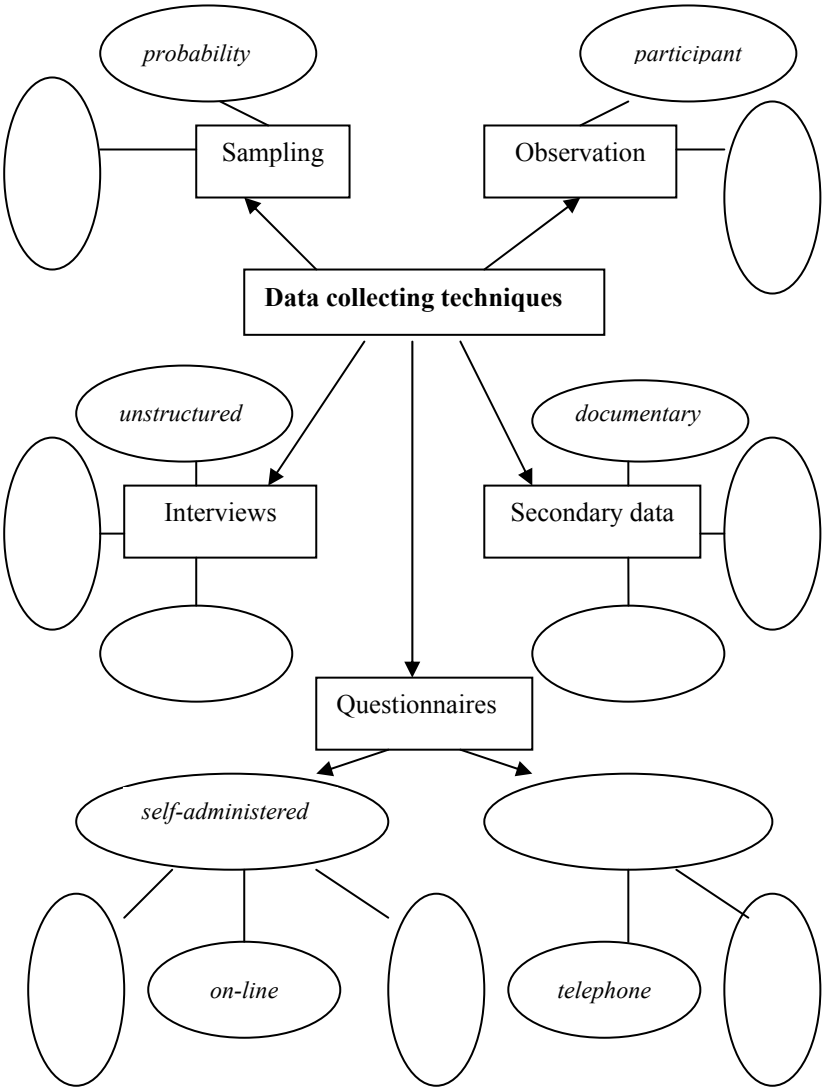


Figure 6.2. Data collecting techniques

3. Match terms in column A with their definitions in column B.

A	B
1) respondent interview	a) statistical test to determine the probability that an observed set of values for each category of a variable differs from a specified distribution
2) informant interview	b) the collection and analysis of data from every possible case or group member in a population
3) Kolmogorov-Smirnov test	c) data collection technique in which each respondent reads and answers the same set of questions in a predetermined order without an interviewer present
4) closed question	d) question that provides a number of alternative answers from which the respondent is instructed to choose
5) filter question	e) subgroup or part of a larger population
6) mean	f) interview directed by the questions posed by the interviewer
7) sample	g) systematic errors made by observers, as a result of tiredness, for example
8) census	h) interview guided by the perceptions of the interviewee
9) self-administered questionnaire	i) data collection technique in which an interviewer reads the same set of questions to the respondent in a predetermined order and records his or her responses
10) interviewer-administered questionnaire	j) selection of sampling techniques in which the chance, or probability, of each case being selected from the population is known and is not zero
11) pilot test	k) the average value calculated by adding up the values of each case for a variable and dividing by the total number of cases
12) probability sampling	l) small-scale study to test a questionnaire or interview checklist, to minimize the likelihood of respondents having problems in answering the questions and of data recording problems as well as to allow some assessment of the questions' validity and the reliability of the ata that will be collected
13) non-probability sampling	m) selection of sampling techniques in which the chance, or probability, of each case being selected is not known
14) observer error	n) closed question that identifies those respondents for whom the following question or questions are not applicable, enabling them to skip these questions

4. Match explanations of various data presenting techniques with Figures 6.3. – 6.8. There is one extra explanation.

1. Diagram for showing frequency distributions for a grounded continuous data variable in which the area of each bar represents the frequency of occurrence.
2. Diagram for showing trends in longitudinal data for a variable.
3. Diagram for showing frequency distributions for a categorical or grouped discrete data variable, which highlights the highest and lowest values.
4. Diagram frequently used for showing proportions for categorical data or a grouped continuous or discrete data variable.
5. Diagram for comparing frequency distributions for a categorical or grouped discrete or continuous data variable, which highlights the highest and lowest values.
6. Diagram for showing the relationship between two quantifiable or ranked data variables.
7. Technique for summarizing data from one or more variables so that specific values can be read.

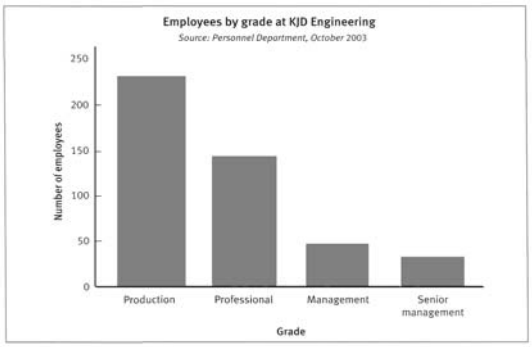


Figure 6.3. Bar chart

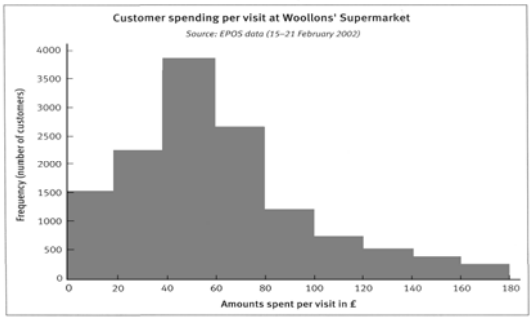


Figure 6.4. Histogram

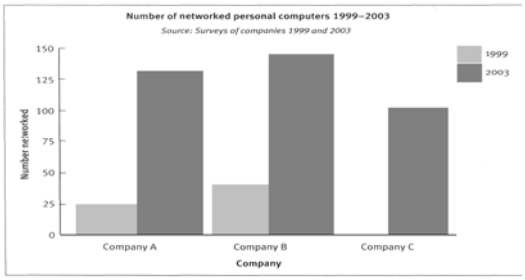


Figure 6.5. Multiple bar chart

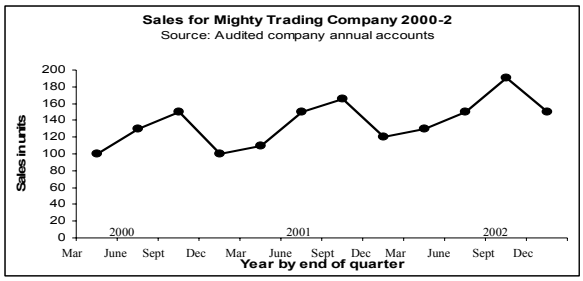


Figure 6.6. Line graph

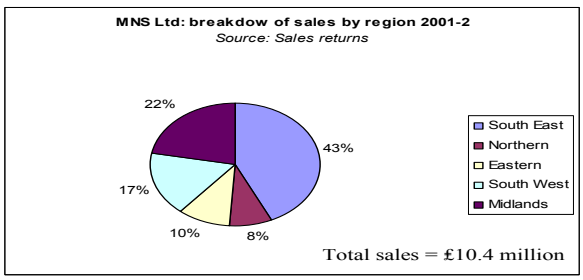


Figure 6.7. Pie chart

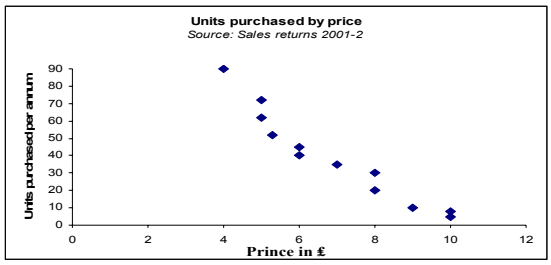


Figure 6.8. Scatter graph

5. Designing a questionnaire a researcher can use a combination of open and closed questions. What types of questions do you think the following examples illustrate? Match A-F with 1-6.

A – open questions, *which* allow respondents to give answers in their own way
B – list questions, where respondent is offered a list of items, any of which may be selected
C – category questions, where only one response can be selected from a given set of categories
D – ranking questions, where the respondent is asked to place something in order
E – rating (or scale) questions, in which a rating device is used to record responses
F – quantity questions, to which the response is a number giving the amount

Please list up to three things you like about your job: **1**
1…….
2…….
3……..

How often do you visit this shopping centre? **2**

- o first visit
- o once a week
- o less than fortnightly to once a week
- o 2 or more times a week
- o less than once a week
- o less often

What is your year of birth? **3**

1 9

Please tick the box in the provided column for services you provided as a home care assistant for this client in the past month. **4**

service	**provided**
cleaning rooms	☐
shopping	☐
bed making	☐
laundry	☐
other	☐

Please number each of the factors listed below in order of importance to you in your choice of a new car. Number the most important 1, the next 2 and so on. If a factor has no importance at all, please leave blank. **5**

factor	**importance**
acceleration	[ ]
depreciation	[ ]
safety features	[ ]
fuel economy	[ ]
price	[ ]
driving enjoyment	[ ]
other	[ ]

For the following statement please tick √ the box that matches your view most closely. **6**

	agree	tend to agree	tend to disagree	disagree
I feel that employees' views have influenced the decisions taken by management.	□	□	□	□

6. Mark the following characteristics as belonging to quantitative or qualitative data.

Data characteristics	Quantitative data	Qualitative data
1. Based on meanings derived from numbers	√	
2. Based on meanings expressed through words		
3. Collection results in non-standardised data requiring classification into categories		
4. Collection results in numerical and standardised data		
5. Analysis conducted through the use of diagrams and statistics		
6. Analysis conducted through the use of conceptualisation		

7. Using data from Table 6.1. fill in the blanks in the text concerning links to the purpose of research and research strategy. Note that means more frequent, means less frequent.

Table 6.1. Uses of different types of interview in each of the main research categories

	Exploratory	Descriptive	Explanatory
Structured			
Semi-structured			
In-depth			

Each type of interview has a different purpose. Structured interviews can be used in survey research to gather data, which will then be the subject of quantitative analysis. Semi-structures and in-depth interviews are used in qualitative research in order to conduct discussions not only to reveal and understand the 'what' and the 'how' but also to place more emphasis on exploring the 'why'.

There are various ways in which your research can be classified. One classification is related to exploratory, descriptive and explanatory studies. By examining the categories within this classification we can see how the various types of interview may be used to gather information for, and assist the progress of, each kind of study:

In an 1)_____ study, in-depth interviews van very helpful to 'find out what is happening to seek new insights'. 2) _____ interviews may also be used in relation to an exploratory study.

In 3) _____ studies, structured interviews can be used as a means to identify general patterns.

In an 4) _____ study, semi-structured interviews may be used in order to understand the relationships between variables, such as those revealed from a descriptive study. 5) _____ interviews may also be used in relation to an explanatory study, in a statistical sense.

FOCUS ON LANGUAGE

8. Find Russian equivalents of the English words used in the text.

1) bar chart	a) промежуточная (предварительная) сводка
2) pie chat	b) среднее значение
3) scatter graph	c) диаграмма рассеивания
4) pre-set code	d) интерквартильная широта
5) ranking	e) протокол совещания (собрания)
6) rating	f) основа выборки
7) grid	g) столбиковая диаграмма
8) response rate	h) готовая схема кодирования
9) pilot test	i) наиболее вероятное значение
10) administration of questionnaires	j) ранжирование, упорядочивание
11) regression analysis	k) памятка, уведомление
12) chi square	l) круговая диаграмма
13) inter-quartile range	m) m.середина, промежуточная ступень
14) box plot	n) заранее установленный код
15) sampling frame	o) перепись, сбор данных
16) off-the-shelf coding schedule	p) оценка; отнесение к классу, разряду
17) minutes	q) вероятностная выборка
18) mean	r) пробное испытание
19) medium	s) квадратная диаграмма
20) mode	t) скорость реакции
21) census	u) хи-квадрат
22) interim summary	v) проведение анкетирования
23) probability sampling	w) решетка, сетка
24) memo	x) регрессивный анализ

9. Complete the sentences with the words from the box. Put the words into the correct form.

> **a.** to administer, **b.** to interview, **c.** chart, **d.** interim, **e**. respondent,
> **f**. to sample, **g**. observation, **h**. to rank, **i**. predetermined,
> **j**. to conceal, **k.** graph, **l.** to rate, **m**. response

1. It takes a lot of time to prepare, _____, and mark the tests.
2. The air is _____ continuously to measure changes in air pollution.
3. Why did you decide to _____ your true identity?
4. He was _____ on the radio this morning.
5. She made several excellent _____ in her essay on Charles Dickens.
6. You can then draw a _____ to illustrate the changes.
7. Enter your results on the _____.
8. Nomura is now _____ third among the world's information services companies.
9. In a recent poll, the environment is _____ as the number one issue by 30 % of the voters.
10. The insurance company made an _____ payment while the claim was being investigated.

11. The department has exceeded its _____ level of spending.
12. The survey got more than 1,000 _____ .
13. Sixty-four per cent of _____ reported side effects from the drug.

PRACTICE ACTIVITIES

10. Analyze information on data types and fill in the spaces in Figure 6.9. below. Illustrate each type of data with your own examples.

TYPES OF QUANTITATIVE DATA

According to many statistics textbooks quantitative data are classified into data types using a hierarchy of measurement, often in ascending order of numerical precision. These different levels of numerical measurement dictate the range of techniques available to you for the presentation, summary and analysis of your data.

Quantitative data can be divided into two distinct groups: *categorical* and *quantifiable.*

Categorical data refer to data whose values cannot be measured numerically but can be either classified into sets (categories) according to the characteristics in which you are interested or placed in rank order. They can be further subdivided into descriptive and ranked. A car manufacturer might categorise the cars it produces as hatchback, saloon and estate. These are known as *descriptive* (*or nominal*) *data* as it is impossible to measure the category numerically or rank it. For virtually all analyses the categories should be unambiguous and not overlap. Although these data are purely descriptive, you can count them to establish which category has the most and whether cases are spread evenly between categories. *Ranked* (*or ordinal*) *data* are more precise. In such instances you know the definite position of each case within your data set, although the actual numerical measures on which the position is based are not recorded.

Quantifiable data are those whose values you actually measure numerically as quantities. This means that quantifiable data are more precise than categorical as you can assign each data value a position on a numerical scale. Within this group there is, again, a subdivision: continuous and discrete. *Continuous data* are those whose values can theoretically take any value provided that you can measure them accurately enough. Data such as furnace temperature, delivery distance and length of service are therefore continuous data. *Discrete data* can, by contrast, be measured precisely. Each case takes one of a finite number of values from a scale that measures changes in discrete units. These data are often whole numbers (integers) such as number of mobile phones manufactured or customers served.

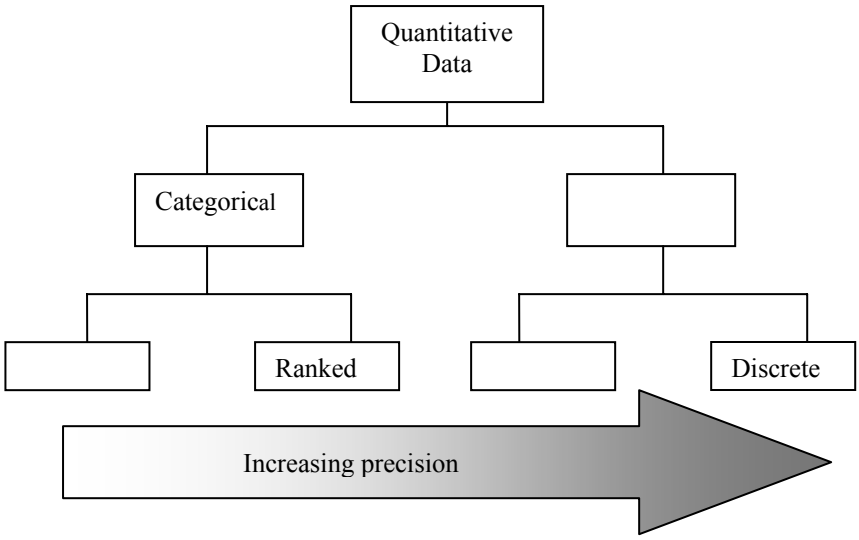


Figure 6.9. Types of data and levels of numerical measurement

The more precise he level of measurement the greater the range of analytical techniques available to you. Data that have been collected and coded using precise numerical measurements can also be regrouped to a less precise level where they can also be analysed. For example, a student's score in a test could be recorded as the actual mark (discrete data) or as the position in their class (ranked data). By contrast, less precise data cannot be made more precise. Therefore, if you are not sure about the level of precision you require, it is usually better to collect data at the highest level possible and regroup them if necessary.

CASE STUDY

AMINA'S STORY

Amina was a diligent student who had worked very hard on her MBA. Her research had been on the marketing strategies of UK main car dealerships in the wake of the trend for UK new buyers to import their vehicles from continental Europe. She had submitted her draft project report, and was awaiting the comments of her supervisor with quiet confidence. She anticipated that there would be some more work to do on the report, but she thought that this would be minor amendments. She was sure that the main thrust of the report was fine. However, when Amina went to see Dr Wang, her project advisor, she was disappointed to learn that he was not impressed with what she had written. In fact Dr Wang told Amina that as it stood her report was some way from MBA standard, and that if she wanted to obtain the degree she had a lot of work to do to improve it.

Amina was taken aback to hear this news, but she listened carefully to Dr Wang's explanation and made notes. His main criticism was that the report was too 'rambling' and insufficiently succinct. The context of the research was explained clearly. Indeed Dr Wang though that Amina had spent far too much time on her description of the UK retail motor market. Her statement of the problem facing UK retail dealers was also clear. However, he was critical of the way in which Amina had used the literature. He thought that there was too much on the car industry and too little on marketing theory. Dr Wang had emphasized to Amina in all their meetings that her project was about how organizations develop their marketing strategies in the light of unexpected competition. In that sense Amina's project could be about any organization in any market. However, Amina's interest in cars had dominated her consideration of the theory of marketing strategy.

Amina had conducted with senior sales managers in a sample of dealerships representing the main manufacturers. She had explained how she did this, but there was little about any alternative data collection methods that could have been pursued. Dr Wang was critical of this, but his main criticism concerned the final third of Amina's report. In this she had described the results of the interviews in great detail. But after this detailed presentation of the findings were a mere two pages of conclusions. Even these were little more than a summary of the findings.

Dr Wang thought Amina's report was well written and very interesting, but not what was needed for a successful MBA project report. His overall comment was that 'it tells a very interesting story, Amina, but your job as a management Master's degree student is to use theory to help to explain and even solve management problems. Leave the story-telling to the business journalists.'

At first Amina was bitterly disappointed, and she complained incessantly to the friends with whom she shared an apartment about Dr Wang's unfairness. However, as the days passed she became more reflective – so much so that this was what she admitted to her friend Gisela:

'I suppose I am to blame. The tutors told us that we should start the writing process early and write separate sections on each aspect of the research, keeping in mind the purpose of each aspect and ensuring that there was a logical flow to the report and it fitted together as a coherent whole. But I got so involved in the research interviews, and all the other course assignments, that there never seemed to be time to write. Then when the deadline approached I panicked and wrote the whole thing in less than a week, using days and nights. I can see now that I should have built it up, read it and reread it and amended it, but I never had time.

'I can also see what Dr Wang means about telling the story like a business journalist. That's much easier than academic work. It's less rigorous. As long as it reads ok I suppose that's all there is to it.'

Oh well back to it!

11. Answer the questions:

1. What did Dr Wang mean by 'your job as a management Master's degree student is to use theory to help to explain and even solve management problems'?
2. How might Amina improve her findings section?
3. What do you think Amina has to do to get Dr Wang's full approval for submission of her MBA project for assessment?
4. How would you suggest Amina now approaches the rewriting of her report?

PROGRESSING YOUR RESEARCH PROJECT

Deciding on the appropriateness of data collecting and analyzing techniques

- Return to your research question(s) and objectives. Decide on how appropriate it would be to use observation/ secondary data/ sampling/ interviews/ questionnaires as part of your research strategy. If you do decide that some of the technique is appropriate note down the reasons why you think it will be sensible to collect at least some of your data in this way?
- If you decide that using observation/ secondary data/ sampling/ interviews/ questionnaires is suitable, decide which of the types of these methods will be more appropriate. Note down your choice and the reasons for this choice.

- If you decide that one of the types of observation/ secondary data/ sampling/ interviews/ questionnaires is more appropriate, what practical problems do you foresee? How might you overcome them? What threats to validity and reliability are you likely to encounter? How might you overcome these?
- Decide whether the data you are collecting could usefully be analysed quantitatively or qualitatively.
- If you decide that your data should be analysed quantitatively you must ensure that the data collection methods you intend to use have been designed to make analysis by computer as straightforward as possible.
- Once your data have been entered into a computer, you need to explore and present them. You should select the most appropriate diagrams and tables after considering the suitability of all possible techniques.
- Once you are familiar with your data, describe and explore relationships using those statistical techniques that best help you to answer research questions and are suitable for the data type.
- If you are collecting qualitative data, decide which of the analytical strategies are more appropriate to your research project.
- Where your research project is based on deductive strategy, develop a set of categories from your research question(s) and objectives, conceptual framework, research themes and initial propositions. Produce description of each of these categories.
- Using one of the transcript copies of interviews try to allocate units of data to appropriate categories by writing their code labels alongside the text in the left-hand margin. Again evaluate this set of categories and modify any that appear to be inappropriate.
- Where your research project is based on inductive strategy, work through one of the transcript copies and seek to identify categories related to your research purpose. Write appropriate code labels for these categories alongside the text in the left-hand margin. List these categories and their labels and produce a description for each of the categories that have been devised.
- Once you have allocated units of data to the set of categories in use cut these out and transfer them to an appropriately labeled index card. Read through the units of data within each category.

SELF-CHECK QUESTIONS

1. What are widely accepted data collecting techniques?
2. What are the benefits of sampling techniques?
3. What does the term “population” mean in sampling context?
3. What are two types of sampling techniques and what do they differ in?
4. What does the choice of sampling techniques depend on?
5. What do we call the technique which involves watching, recording, description, analysis and interpretation of people’s behaviour?
6. What is the difference between participant and structured observation?
7. What do we call the data that have already been collected for some other purpose, processed and subsequently stored?
8. What do written and non-written documentary secondary data include?
9. What types are interviews classified into according to the level of formality and structure?
10. What kind of interview would you use if you need to explore in depth a general area in which you are interested.?
11. What are other names for a non-directive interview?
12. What is a questionnaire?
13. What are two types of questionnaires according to the way they are administered ?
14. What types of questions are used in designing a questionnaire?
15. Why should all data be recorded using numerical codes?
16. What is the choice of table or diagram influenced by?
17. What types of diagrams are used to show specific values/ highest and lowest values/ trends/ proportions/ distribution relationships between variables?
18. What statistical methods are employed to describe the central tendency/ dispersion/ to predict values?
19. What does the process of qualitative analysis generally involve?

GLOSSARY

chi square n.	хи-квадрат
complain v.	жаловаться
conceal v.	скрывать, утаивать, умалчивать
dealership n.	фирма, продающая товар для данного предприятия
deviate v.	отклонять, вызывать отклонение, менять направление
disappointed f.	разочарованный, обескураженный
emphasise v.	подчёркивать, придавать особое значение, делать особое ударение (на слове, факте)
estimate v.	оценивать, приблизительно подсчитывать
evenly adv.	равномерно
foresee v.	предвидеть
frame n.	строение, структура, схема, система
hatchback n.	автомобиль с открывающейся вверх задней дверью
hierarchy n.	иерархия
histogram n.	гистограмма (графическое представление статистических данных) , столбиковая диаграмма
inherent a.	свойственный, присущий, собственный, неотделимый, неотъемлемый, связанный
incessantly adv.	непрерывно, постоянно, бесконечно
intermediate a.	промежуточный, переходный; средний, занимающий промежуточное положение
mere a.	простой, не более чем, всего лишь
minutes n.	протокол
multiple a.	множественный, многократный, составной; сложный, со сложной структурой
predetermined	предопределённый, заранее установленный
prevalent a.	превалирующий, преобладающий
qualitative a.	качественный
quantifiable a.	измеримый количественно, поддающийся количественному определению
quantitative a.	количественный
quartile n.	квартиль
ranking n.	ранжирование, упорядоченность, упорядочивание
scatter n., v.	разброс, рассеивание; разбрасывать, рассеивать
subsequent a.	дальнейший, последующий
succinct a.	краткий, сжатый, лаконичный
taken aback a.	захваченный врасплох
thrust n.	суть, сущность, главный вопрос, главная тема
transcript n.	дубликат, копия, расшифровка (стенограммы)
trap n.	ловушка
unfairness n.	справедливость

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