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ENGLISH WRITING COURSE FOR ENGINEERING STUDENTS

1 ORAL AND WRITTEN COMMUNICATION

In this unit we shall focus on the factors involved in the process of communication, as well as on the differences in form and function between oral and written communication.

1.1. The Process of Communication

The function of all language is to communicate meaning.

In very simple words, **the process of communication** can be defined as the transmission of a message from a source to a destination.

Electrical communications involve the science and technology by means of which information is collected from a source, transformed into electric currents or fields, transmitted over electrical networks or through space and reconverted into a form suitable for interpretation by a receiver.

In the case of human communication, the source of information is the impulse that makes the transmitter send a signal along visual, acoustic, olfactory and/or tactile channels. This signal is picked up by the receiver and converted into a coherent message. The code is the one that accounts for the forming and understanding of messages. It represents the set of rules known to both transmitter and destination (sender and receiver), which assign a certain meaning to a certain signal.

The main factors involved in this process are the following:

• **the source of information** (an idea or an impulse in the mind of the speaker or writer, an actual event);

• **the transmitter** (the speaker's voice, a typewriter, a computer, a telex machine);

• **the signal** (an electric impulse, light waves, sound waves);

- **noise** (any physical, psychological or mental condition that disturbs proper reception);
- **the channel** (electric wire, visual or acoustic channel);
- **the receiver** (an amplifier, the eye, the ear);
- **the message**;
- **the destination**;
- **the code** (set of rules).

Such factors represent a basic framework, within which the categories can differ in number and type, depending on the specific situation of communication.

For example, the *transmitter* may be different from the *sender* and the *recipient* from the *destination*: with Eastern Chinook groups, during special ceremonies, the words uttered by the leader are repeated in front of the crowd, by a specially appointed group member.

There are many intercultural differences regarding the *channel*, which could be acoustic (sounds, music), visual (graphic, pictorial), tactile, olfactory, or a combination of two or more. Some modern theatrical performances make use of a variety of signals – movement, sounds, electrical impulses, smells – which are sent simultaneously along different channels to the spectator, who interprets this complex of messages and assumes in turn the role of transmitter of signals to the performers along visual and acoustic channels. Sometimes, exhibitions and museums use multichannelled communication systems in an endeavour to bridge the gap between present and past. Thus, *The Viking Museum* in York is a curious example of modern technology used in order to recreate the atmosphere of family life in the 10th century. Placed in low-speed trolleys (which seem to play the part of a time-machine), tourists visiting *The Viking Museum* are 'bombarded' with signals (words in Old Danish seemingly 'uttered' by the family members, onomatopoeia – such as 'cock-a-doodle-do', old clothes and tools, even smells that suggest an immersion in the past). These signals come simultaneously along acoustic, visual and olfactory channels

in an attempt to reconstruct the atmosphere of the past via modern technology.

The *code* represents another important variable, which, in the case of verbal communication includes standard language, slang, professional jargon, ciphered language, dialect etc. One and the same person may handle various linguistic and non-linguistic codes in different situations, depending on where communication takes place, who the other participants are, what topic is discussed.

1.2. Functions of Language

Researchers have tried to discern certain universal functions of language. More often that never, such functions have been associated with factors pertaining to the process of communication.

Roman Jakobson (1963) found six main functions corresponding to the main factors involved in human communication:

1) the **emotive** function, that focuses on the speaker's state;

2) the **conative** function, that focuses on the speaker's wishes that the addresses do or think this or that;

3) the **poetic** function, which focuses on the way in which the message is encoded;

4) the **phatic** function, which focuses on the communication conditions (on the channel) and ensures contact between speaker and receiver;

5) the **metalinguistic** function, which focuses on the code;

6) the **referential** function, which focuses on the referential character of the message (*Referents* are objects we speak and write about. They usually exist in the real world, but sometimes they exist only in our imagination).

One and the same sentence can be regarded and analysed in terms of each of these functions. Thus, "Look the word 'metalinguistic' up a dictionary, do you hear me?" can be said to have:

• an **emotive** function – when saying this, the speaker can be curious or annoyed, furious or even bored;

- a **conative** function – the sentence can be interpreted as a directive (an order or a request) addressed to hearer;
- a **phatic** function – the "do you hear me?" part is meant to check if the message has been received by the hearer;
- a **metalinguistic** function – the utterance includes 'word' which is a linguistic unit;
- a **referential** function – the message points to a referent, an object in the real world (a certain dictionary).

In the case of literary texts, the situation becomes even more complex. Thus, Richard's well-known cue "A horse! a horse! my kingdom for a horse!" from Shakespeare's *Richard III* could be interpreted as having:
- an **emotive** function – for Shakespeare, Richard III or for the actor playing the part of Richard III;
- a **conative** function – a speech act meant to persuade someone to give king Richard a horse in order to replace the one that had just been killed;
- a **poetic** function exemplifying Shakespeare's craft as a playwright;
- a **phatic** function meant to establish communication between King Richard and someone else in the battlefield;
- a **referential** function pointing to *referents* that exist in the dramatic world created during the performance of the play; pointing also to the battle of Salisbury (which was a real event) and to the incoming defeat of Richard III (a real historical figure).

Brown and Yule (1991[1983:1]) restrict the number of functions to two:
- **transactional** – that function "that serves in the expression of content";
- **interactional** – that function "involved in the expression of social relations and personal attitudes".

This dichotomic pair stands in close relationship with other functional dichotomies found by different authors, as can be seen in the table below:

Authors	Functional Dichotomies	
Bühler	representative	expressive
Jakobson	referential	emotive
Halliday	ideational	interpersonal
Lyons	descriptive	social-expressive
Brown & Yule	transactional	interactional

1.2.1. The Transactional View

While linguists acknowledge that language may be used to perform many communicative functions in different societies and cultures, they generally argue that the most important one is the communication of information. Thus, Lyons (1985[1977:32]) agrees that language is used to express "feelings, moods and attitudes", but he nevertheless assumes that the most important function is "the intentional transmission of factual, or propositional information". Brown and Yule (1991[1983]) call this kind of language **primarily transactional**. In such a situation, language is '*message oriented*'. What is important is the efficient transmission and reception of information.

Can you think of everyday situations in which language is used primarily to convey information?

Let us enlist some of them:
• a university professor who gives a lecture;
• a doctor who tells a nurse how to administer medicine to a patient;
• a scientist who describes an experiment;
• this coursebook;
• a passer-by who gives directions to a tourist.

In all these cases and in many others, it matters that the speakers/writers should make what they say/write clear for the listeners/readers. If the message is not properly understood by the recipient, the consequences will be unfortunate (even disastrous). Take, for example, the second situation above. What can happen if a nurse misunderstands what the doctor tells her and administers

another kind of medicine to a patient or if she administers the right medicine in an inappropriate manner?

1.2.2. The Interactional View

While linguists have been mainly interested in the way language is used for the transmission of information, i.e. in the **transactional** function of language, sociolinguists and conversational analysts have paid particular attention to how language is used to establish and maintain social relationships, i.e. to the phatic, **interactional**, interpersonal function of language.

This is clearly true about a great deal of everyday conversation. Let us imagine that, after a couple of very cold days, the sun is shining and it is getting warm. Let us imagine then that, on such a fine day, two strangers are waiting for the bus and one of them turns to the other and says "My, what a beautiful day!" In this case it is difficult to suppose that the speaker is conveying any new information to the listener. It would be more likely to assume that the speaker is signalling his willingness to be friendly and start a conversation.

A good deal of casual conversation contains phrases which are meant more to start a conversation or to keep it going than to transmit any information: *greetings* are a clear example; the hearer's *repeating* or *echoing* something said by the speaker may also be regarded as interactional in nature.

1.3. Spoken and Written Language

Before reading this section, use your background knowledge to answer these questions:

> • *Which appeared first in the development humanity: articulate speech or writing? Why do you think it happened this way and not the other way round?*
> • *Is there any relationship between the order in which speech and writing appeared in the development of humanity and the order in which the two are acquired by*

1.3.1. Brief Historical View

Man has inhabited the earth for more than 1,000,000 years. It is supposed that articulate speech has been used for about 500,000 years, whereas the first writing system was developed in Sumer, southern region of ancient Mesopotamia in the 4th millennium BC. Called cuneiform, it consisted of wedge-shaped characters that represented words and syllables rather than letters. Egyptians used hieroglyphics, based on pictures representing objects, ideas, sounds. Egyptian hieroglyphics were used from 3000 BC until about 5000 BC. They consisted of 604 symbols that could stand for words, sounds, classifications. The first system of writing based on the use of letters is only 3000 years old. This demonstrates that for a great period of time, people communicated only through speech. Ancient languages developed a system of vocabulary and grammatical structures before language could be stored in some graphic form. Writing appeared as a result of economic development, the main reason being the necessity to record economic data.

1.3.2. Differences between Spoken and Written Language

Examine these 4 items and decide which are examples of written and which are examples of spoken language. What features helped you decide which is which?

1. To the south the Grassmarket is conspicuous below. This was once the site of a weekly market.

2. It's quite nice just now the Grassmarket since... it's always had the antique shops but they're looking... the're em become a bit nicer.

3. Yes, um the system is quite transparent: students apply for universities of their choice several months before they take their final exams which will... which are called A levels, advanced levels, and... the student is usually invited for an interview at a number of these universities and then

> the university will set requirements for these A level results and so the student might go away from the interview knowing that he or she will have to get certain grades to be able to get a place at that university.
>
> 4. If you are under the age of 21 (at entry), you must have at least two A level passes or other suitable qualifications. You must also be able to present evidence of competence in English Language. No specific number of GCSE or 0-level passes is stipulated. You will normally need A level grades above the minimum, but each application is considered on its merits.

Bearing in mind the examples above, let us examine the differences between spoken and written language under three main headings:

- **interaction**
- **message**
- **form**

1.3.2.1. Interaction

Perhaps the main difference between speech and writing from the point of view of interaction is **time**. Speech is produced and processed in real time, which makes the endeavour more demanding both for speaker and listener. In oral communication, the roles of speaker and listener shift and alternate all the time: *I* becomes *you* and *you* becomes *I* as conversation progress. As speakers, we have to monitor what we have just said and determine whether it matches our intentions, while uttering the current phrase, monitoring that process and simultaneously planning the next utterance, making it fit into the overall pattern and monitoring its reception by the hearer. Let us remember that there is no permanent record of what has been said earlier and usually there are no notes to remind us what to say next. That is why under this pressure we often make mistakes or false starts, we may repeat ourselves and use '*fillers*' like *um* and *er*. As hearers, the task seems sometimes

more challenging, especially if our interlocutor is a native speaker of a language we have learnt mainly through reading and writing. While listening to our interlocutor's utterance and trying to make sense of it, we have to plan our contribution to the dialogue, make it fit our intentions and the overall pattern of the conversation. However, if we miss something, we can sometimes ask the speaker to repeat, i.e. meaning can be checked and, if necessary, modified as conversation progresses. This happens because oral interaction is **reciprocal**, i.e. the receiver is present and shares the same spatio-temporal coordinates with the speaker (in telephone conversations, however, the spatial coordinates of speaker and listener can be wide apart).

When writing, we are not usually under the pressure of time. Exceptions are represented by those instances when we write in order to record or store what we hear (e.g. making notes while listening to a lecture). Under normal conditions, it takes more time to write than to speak – it takes 6 minutes to write down something that was said in one minute. Writing, like reading is a **recursive** process. We can always return to something we have already written, can correct, reformulate or reorder (part of) the text already produced, can pause before choosing a word, without fear of being interrupted. While speakers know that their words will be heard by their interlocutor and if these words are not what they intend to say they will have to perform some public repair, writers can simply cross out, delete and rewrite.

However, this lack of pressure also has some disadvantages. Written interaction is **non-reciprocal**. Writers are what might be called *solitary beings*. They cannot see their readers, and are usually far away in space (sometimes in time) from their receivers (an exception might be exchanging short messages on slips of paper in the classroom or in a reading room). Writers have **no access to intermediate feedback**, so they have to imagine the reader's reaction and to invent a shared context. Therefore, written language is **context independent**.

Speakers, on the other hand, can receive **immediate feedback** from their listeners, can interpret the listeners' reactions, judge if they are agreeing or disagreeing with what is being said, and adjust their talk accordingly. Moreover, the verbal message can be supported by '*voice quality*' effects (pitch, tone, rate of speech), as well as paralinguistic means (facial expression, posture, movements). The shared situation of communication can also play a part in disambiguating a message and communicating meaning. Thus, a question like "Is this it?" can be easily understood by the hearer if the speaker is pointing to the referent s/he speaks about (a book, a photo, a CD etc.). If someone asks you "Where's the other mouse?", while working on the computer, you will not assume that the speaker refers to the small rodent called '*mouse*' or to some kind of toy bearing resemblance to it; you will understand you are asked about a certain device that is part of a computer. Similarly, if somebody says: "Tea?", while heading to the kitchen, you will immediately understand you are neither asked what '*tea*' means, nor questioned about the existence of a substance called 'tea'; you will readily understand that you are being offered a cup of tea. Spoken language is therefore **context dependent**.

1.3.2.2. Message

Distinction has already been made between two main functions of language: **transactional** and **interactional**. The weight of each of these two functions in spoken and written language differs: thus, whereas we use speech primarily to establish and maintain human relationships (**interactional** use), we use writing mainly to transfer information (primarily **transactional** use). There are, however, notable exceptions.

> *Before going on reading, try to enumerate such exceptions.*

Speech may be used to transmit information (**transactional** use) in lectures, radio or TV broadcasts; on the other hand, the primary function of written language in personal letters is

interactional, not **transactional**. When speech is used for the detailed transmission of factual information, the recipient may resort to writing in order to **store** the information s/he is presented with. Thus, while listening to a lecture, students usually make notes; a doctor may write down the patient's symptoms, someone is usually in charge with writing the minutes of a meeting. Even during casual conversations there may be a switch from the spoken mode to writing (we write down our friends' addresses or telephone numbers, cooking recipes etc.) Why is it so? There is a general expectation (supported by evidence) that detailed facts will soon be forgotten or will not be remembered correctly if they are exposed only in the spoken mode. Therefore, people usually write down such details. Hence, an important difference between speech and writing: speech is essentially **transitory**, while writing is designed to be **permanent**. As Brown and Yule pointed out:

> This aspect of communication is obviously what written language is supremely good at, whatever for the benefit of the individual in remembering the private paraphernalia of daily life, or for the benefit of nations in establishing constitutions, laws and treaties with other nations. (1991[1983:14])

An important characteristic of written language derives from here – the fact that it can be **stored**, so that communication can take place over space and time. We cannot hear the words Shakespeare uttered, but we can read and even reproduce the words he wrote.

Due to its real time dependence, the organisation of the message within a spoken text is largely **unplanned**. The pressures of face-to-face communication, the possible threat represented by the interlocutor wanting to take a turn, all these make the speaker repeat himself a good deal, using the same syntactic structure and/or the same lexical items, make him use the first word that comes to his mind rather than the *mot juste*, make him fill in pauses with '*fillers*'. That is why the information presented in the spoken mode is frequently **rambling, poorly organised** and **repetitious**. As a

consequence, information is less condensed, i.e. we can speak of a **low density of information**.

The organisation of the message in a written text is generally **planned**. The writer has time to construct and reconstruct a text (write several drafts) until s/he gets the final product. As a result, written language is characterised by rich lexis and well-organised structure; the message is usually presented concisely, logically and without repetition. Information is **densely packed**.

1.3.2.3. Form

There are, of course, many different forms of spoken language which coexist and can be identified within one geographical area (Romania, Britain): dialectal differences, accent differences, and register differences, depending on the topic of discussion, the roles of the participants etc. There are also individual distinctions relating to the educational background and in particular to the level of exposure to written language forms: it is obvious that the speech of those who have been exposed for a long time to written forms of language (mainly through reading) will be quite different from the speech of those who have read less or have not read any single book or article. Written language, on the other hand, may be characterised by different degrees of formality, depending on the *topic, text-type, purpose* and *target audience*.

In what follows we shall compare written and spoken language taking as the norm highly literate written language on the one hand and the speech of those who have not spent many years exposed to written language on the other.

The syntax of spoken language is much **simpler** than that of written language: in spoken language there are many **incomplete sentences**, often just sequences of phrases. Spoken language is characterised by a high proportion of **stock phrases** or **clichés** ("*right at the start*", "*the name of the game*") and by the **repetition** of the same syntactic form ("*I look at fire extinguishers... I look at fire exits... I look at electric cables what... are they properly*

earthed... are they properly covered"). As already mentioned, informal speech contains a great number of prefabricated '*fillers*': *well, erm, so, and so on, I think, you know, of course.*

Speech makes use of **vague, less specific, informal vocabulary**: *stuff, thing, things like that, nice*. **Contractions** are usually preferred to long forms.

Written language, on the other hand, is produced in complete sentences and is characterised by **complex syntax**. It employs a wide range of **markers** indicating both coordination (*and, or, but*) and subordination (*after, (al)though, as, because, but, if, (how)ever, since, that, till, unless, until, when(ever), where(ver), whereas, while, as soon as, as if, as though, in case*). **Passive constructions** are far more used in written language, especially in the technical and scientific style than in spoken language. This is so because the passive allows non-attribution of agency and thus leads to an objective, impersonal manner of expressing oneself which represents a *must* for the scientific research genre. While the writer of scientific articles, reports or papers tries to erase the traces of his ego from the text he writes, speakers prefer to use active constructions which focus on the agent, on the performance of the action.

Another characteristic of written language is the high proportion of **large complex noun groups** ("*closed circuit television camera*", "*a radio program broadcast last week*", "*a new EC-funded survey of European terrestrial TV broadcasters*").

Unlike spoken language, written language is produced in **more sophisticated, less common vocabulary**. Often enough, especially in the case of research articles or specialised textbooks, very **concrete, specific vocabulary** belonging to a certain professional jargon is used.

e.g.

1. Most early time - division - multiple local switching systems employed space - divisions concentrators using metallic cross points, such as crossbar or sealed reed switches between the lines and the interface circuits.

2.	After each session of input by the trainer (on topics such as SWOT analysis, internal and external audits, marketing and pricing of services) the participants were split into small groups to adapt the input and produce a draft document.

If spoken language is produced with a high proportion (sometimes as much as 50%) of **repetition** or **redundancy**, written language displays **little**, if any, **repetition** or **redundancy**.

All these differences lead to other characteristics of written language: **accuracy** and **coherence**. A written text is expected to be accurate at all levels: spelling, word choice, grammar. Since a piece of writing can be stored and inspected, people tend to be more conscious of rules. There is widespread respect for the written word that makes writing more **bound by convention** and **slower to reflect change** than spoken language. Written language is expected to display good presentation, handwriting or typing and layout.

Since writers do not generally share the same spatio-temporal coordinates with their readers, their 'finished products' are expected to be **coherent**. i.e. readers must might be able to follow the thread without having to ask any questions.

As a result, writing is usually associated with **formality** (carefully chosen, formal vocabulary, complex syntax, correct spelling and grammar, use of indefinite pronouns, the impersonal use of the passive), whereas speech is usually associated with **informal contexts**. The above-mentioned characteristics may also be used in speech, but they immediately make the speech look formal and artificial.

1.4. Summary

We began this chapter by presenting the process of communication and the factors involved in it. Next, we discussed the main functions of language and exemplified how one and the same utterance or sentence can be analysed in terms of each of these functions. Starting from examples of spoken and written language, the rest of the chapter dealt with the relationship and

differences between speech and writing, regarded from three perspectives: *interaction, message* and *form*.

1.5. Keywords

channel	paralinguistic elements
code	phatic function
conative function	poetic function
context dependent	process of communication
context independent	receiver
density of information	referential function
emotive function	signal
interactional function	source of information
message	transactional function
metalinguistic function	transmitter
noise	turn

1.6. Activities

1. *Identify the factors involved in the following communication systems:*
a) facsimile (FAX)
b) electronic mail

2. *The following table presents some characteristics of either* **spoken** *or* **written language**. *Supply the corresponding characteristic for each empty box.*

Speech	Writing
• mainly **interactional**	
•	• can be **stored** so that communication can take place over space and time
• largely **unplanned**	•
•	• **recursive**
• interaction is **reciprocal**	•
•	• no access to **immediate**

	feedback
• message supported by **non-verbal** or **paralinguistic** elements	•
• shared context	•
•	• message **cannot be negotiated**
• usually occurs in **informal** contexts	•
• is constantly **changing**	•
•	• produced in **complete sentences** and **complex syntax**
• generally produced in **common, less specific vocabulary**	•
•	• displays **little** or no **repetition** or **redundancy**

•	• characterised by
	    - accuracy
	    - good organisation

3. *Read the text below. Has the writer observed the following characteristics of writer language? Put a **tick** (√) to indicate an affirmative answer.*

1. A piece of writing has a title or a heading.
2. A piece of writing is divided into paragraphs.
3. Each paragraph has a topic.
4. Sentences are signalled by capital letters and full stops.
5. Spelling rules should be respected.
6. Grammar rules should be respected.
7. A piece of writing uses complex noun groups.
8. A piece writing makes us of impersonal expressions (passive voice, *it*, *there*)

How Fingerprints Open Doors

As practical experience gained by criminal investigation departments has shown, a typical fingerprint, which has up to 200 distinct characteristics, is sufficient for unequivocal personal identification. Furthermore, the data necessary to define a fingerprint requires only 1.2 Kbytes of storage space.

Based on this principle, there has been developed an electronic fingerprint identification pad. The pad's central sensor unit contains a CCD camera (charge - coupled device) that makes use of 484 x 484 picture elements. When a fingertip is pressed on the glass surface, the system illuminates the skin with white and coloured light, and analyses the fingerprint structure. The initial analysis and recording of fingerprint data takes approximately 40 seconds. Subsequent comparisons with a reference pattern take only 1.5 seconds if the system is supported in its search, for example, by entering an identification number or a chip card. The identification system is currently approximately twice as reliable as other biometric procedures such as voice recognition.

4. *A piece of writing is generally characterised by formal vocabulary. In the text above find the formal words used in the article which mean the same as the less formal words given in the list on the right.*

Formal	Less formal
	1. completely clear
	2. examination
	3. recognition
	4. and, what is more
	5. about
	6. following
	7. method

5. *Can you identify any specific technical or scientific words in the text* **How Fingerprints Open Doors?**

6. *Count the lexical and grammatical words in the first paragraph. What is the ratio?*

Note: **Lexical words** are nouns, adjectives, verbs and adverbs;
Grammatical words are articles, auxiliary verbs, modal verbs, prepositions, pronouns, negative particles, conjunctions, question words.

Lexical words	Grammatical words

2 WRITING AS A PROCESS

This unit focuses on the process of writing. A conceptual framework of the writing process is suggested which may help you to become aware of the stages involved in the process of composing a text. Such an awareness may have a positive impact both from a cognitive and from an affective point of view: if you have a road atlas you know your way better than others who do not have it; this knowledge will act on your emotions and feelings and will make you more confident when undertaking this journey that will lead to your destination – the written text.

2.1. Process and Product

When we usually think about writing, we have in front of our eyes a text, which more often than never belongs to the literary genre. This is the **product**. When we think about our writing skills, the image in our mind usually changes to reflect the pains we took during our school years to write compositions or essays for the Romanian or foreign language class. This is the **process**.

As you may have guessed, writing can be seen both as a process and a product.

The **process** is the act of doing something in this case the act of writing. The **product** is the result of that act, the thing or 'tangible' object that is produced, e.g. a piece of writing, a text.

In the traditional English class writing was regarded mostly as a product. However, during the past few years there has been a definite attempt to focus on the process of writing as well.

> *Try to remember your English classes at school. Encircle the letter which corresponds to the type of instructions you met more often in your English textbooks. Which instructions care more about the process?*
>
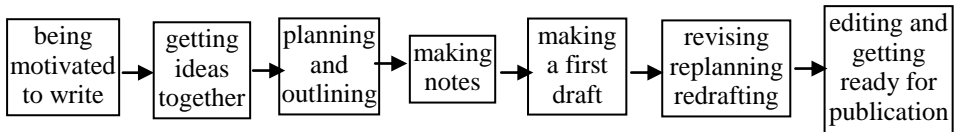> a) Write a composition/essay entitled *My Favourite TV*

> *Programme.*
>
> b)   Some people say that watching TV is good, others that it is bad. What do **you** think?
>
> • *In pairs, make a list of the good and bad points of television. Think of details and specific examples to support your ideas. Enlarge in a class discussion.*
>
> • *Work with your partner. Write an essay of about 200 words for your school magazine entitled* **Watching TV - Pros and Cons.** *Present the good and the bad points of television, as well as your own opinion. Support your ideas with reasons and examples.*
>
> • *When you finish, swap your text with another pair. Assess the essay you have received, using the checklist in your book.*
>
> • *Take back your essay, read the comments made by your colleagues and try to rewrite it.*

2.2. The Process of Writing: Matches and Mismatches

The process of writing is viewed in different ways by different authors. Thus, Tricia Hedge (1995[1988:21]) presents it as a sequence made up of 7 stages:

being motivated to write → getting ideas together → planning and outlining → making notes → making a first draft → revising replanning redrafting → editing and getting ready for publication

She recognises, however, that her diagram oversimplifies things. Writing is not a linear process. As already shown in **Unit 1**, it is a *recursive* activity characterised by continuous movements back and forth between drafting and revising. Ron White (1991:4) views writing as a cycle with the reviewing stage at its centre.

Generating ideas

Focusing   Reviewing   Evaluating

Structuring   Drafting
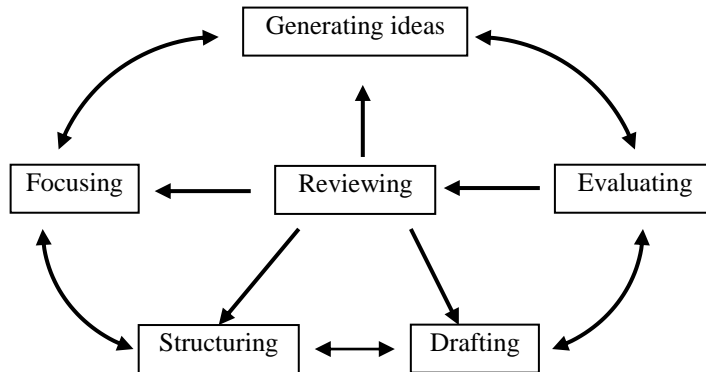
His diagram tries to capture the complexity of the various processes involved in the act of writing and to show the difficulties writers are faced with.

Teresa O'Brien (1989/1996) presents a more complex model of the writing process, based on a diagram which has been slightly adapted from Hayes and Flower (1980). In this model, the writer's world is divided into 3 parts:
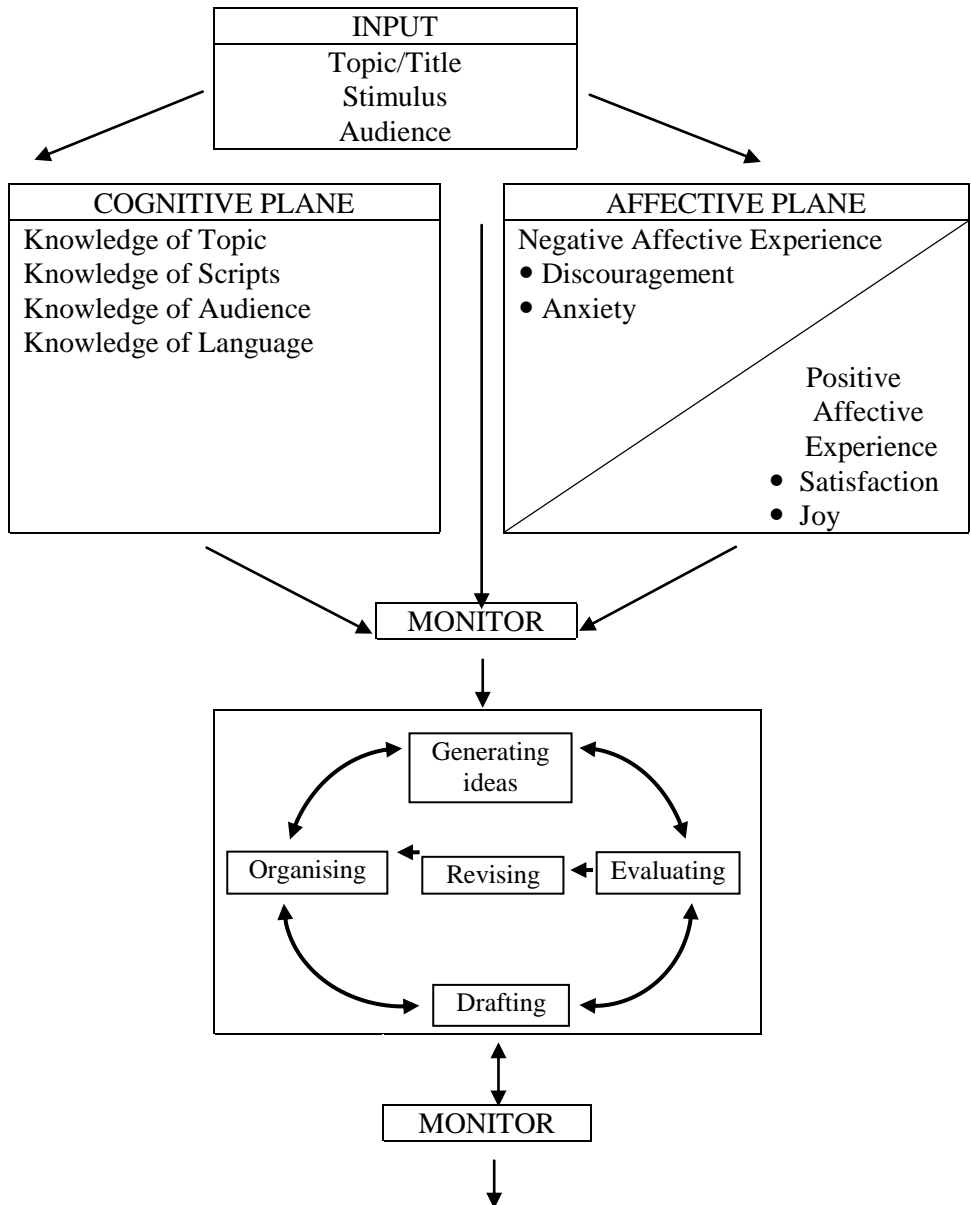
1. long term memory   } provide the context in
2. the task environment   which the writer operates

3. the writing process   { - planning
- generating
- goal setting
- organising
- translating (thought into words)
- reviewing

Her model, though very complex, fails to suggest the dynamics of the writing process: each category of factors is assigned a special box and connections go only one way (there are no double arrows) se that one could speak only of influences, not of interaction among different processes.

We suggest here another model of writing, based on the idea that the process of writing a text may be regarded as a system which

presupposes an **input** (the writing task as such) and an **output** (the text produced by the writer).

2.3. A Functional Model of Writing

```
                        ┌─────────────────────┐
                        │        INPUT        │
                        │      Topic/Title    │
                        │      Stimulus       │
                        │      Audience       │
                        └─────────────────────┘
```

COGNITIVE PLANE	AFFECTIVE PLANE
Knowledge of Topic	Negative Affective Experience
Knowledge of Scripts	• Discouragement
Knowledge of Audience	• Anxiety
Knowledge of Language	
	Positive Affective Experience
	• Satisfaction
	• Joy

```
                        ┌─────────────────────┐
                        │       MONITOR        │
                        └─────────────────────┘
```

```
        ┌───────────────────────────────────────────┐
        │                Generating                  │
        │                  ideas                     │
        │                                            │
        │   Organising   Revising   Evaluating       │
        │                                            │
        │                 Drafting                   │
        └───────────────────────────────────────────┘
```

```
                        ┌─────────────────────┐
                        │       MONITOR        │
                        └─────────────────────┘
```

OUTPUT
Written text

As can be seen from the diagram, the input, represented by the topic one has to write about and different motivating cues that may act as a stimulus (a set of pictures, an actual event etc.) acts upon the writer on both the **cognitive** and **affective** plane.

The **cognitive** plane includes the different kinds of knowledge we need to possess in order to write:

• **knowledge of topic** (what to write about);

• **knowledge of audience** (who to write for/to);

• **knowledge of writing** plans/scripts (how to organise) different types of texts);

• **knowledge of language** (spelling, punctuation, vocabulary, grammar, inter-clause and inter-sentence relations), cohesion and coherence).

For example, if the task is to write a job application letter, we will have to search in our long-term memory various kinds of knowledge necessary to perform the task: **knowledge of the topic** (the specific type of information included in such a letter); **knowledge of the script** (typical layout, the order in which the information we intend to include is to be presented in the body of the letter); **knowledge of the audience** (the personnel manager of a certain company); **knowledge of the language** (formal vocabulary, no contractions, polite forms of address, coherence, clear and concise manner of expression).

The **affective plane** is also influenced by the writing task and may, in its turn, influence our performance of the task. Being usually associated with tests and formal examinations, writing can induce a state of anxiety, which may result in the so-called *writer's block*. Cognitive and linguistic problems can also have a negative impact on the affective plane, leading to apprehension and anxiety. A good command of language, on the other hand, and knowledge of topic, audience and organisational patterns will have a positive influence on the psychological plane, making the writer well-

motivated and eager to perform the task. The affective side can in its turn influence the cognitive one: a well-motivated writer will do his best to overcome any cognitive problems in order to successfully perform the task. In the diagram we represented the affective factors in the form of a rectangle made up of two triangles, in order to show how the positive affective factors (the triangle at the bottom) develop, expand in the unfolding of the writing process.

The three elements mentioned above – the input (the task itself), the cognitive and the affective planes – will influence the writing process as such.

The writing process is presented in the diagram as an oval-shaped network, whose knots are linked by means of single or double arrows. The reason for choosing such a format was our intention to emphasise the *recursiveness* of the writing process with the specific movements back and forth from one level to another.

2.3.1. Generating Ideas

The initial stage is that of **generating ideas**. The three arrows coming from above indicate that ideas for a particular task are generated from knowledge we have already stored away from various sources (reference books, articles) or from our own affective experience. The ideas generated will be limited by the audience we have in mind: a text about virtual reality (VR) systems addressed to professionals will be quite different from a text about VR systems addressed to children.

> *Before going on, try to answer these questions:*
> *How do you generate ideas when you have to write a text on a certain topic, e.g.* **Computers?** *Can you think of any other possibilities for generating ideas?*

There are many techniques used to generate ideas. We shall refer only to some of them:

2.3.1.1. Brainstorming

The object of this technique for generating ideas is to write quickly and, once finished, to return to your work with a critical eye. In order to brainstorm ideas:

• Place your topic at the top of a page;

• Set a time limit (5 or 10 minutes);

• List items related to the topic as quickly as you can.

At this stage, all items are legitimate for your list, because a good idea can emerge out of what seems to be a bad idea.

This technique works very well with groups, because it allows the ideas of a person to be built on those of another. To brainstorm in a small group, the following steps are usually followed:

• The topic is written on the board;

• Each group member offers two or three words or phrases related to the topic;

• All items are written on the board;

• No value judgement is made.

After ideas have been generated and written on the board, they are organised, i.e. grouped into related items. Those that do not fit into a grouping are set aside. Groupings with the greatest number of items indicate areas that may prove to be particularly fertile in developing your piece of writing.

Illustration:
Brainstorming: Robotic Systems

robots: machines

types of robots:　　　 - automata
　　　　　　　　　　 - robotic systems (industry)
　　　　　　　　　　 - androids
　　　　　　　　　　 - cyborgs

uses:　　　　　　　　 - industry
　　　　　　　　　　 - home
　　　　　　　　　　 - army

```
                        - space
advantages:        ⎰   - high accuracy
                   ⎱   - speed
                       - productivity

disadvantages:     ⎰   - have to be programmed
                   ⎱   - lead to unemployment
                       - high cost
                       - can have malfunctions
```

2.3.1.2. Freewriting

Freewriting is a warm-up technique, meant to help you overcome the *writer's block*. To practise this technique, take a watch or a clock and follow these steps:

- Look at the topic you need to write about;
- Write down a sentence starting you point of view at the top of a blank sheet of paper;
- Starting from the topic question, write for five minutes **without interruption. Do not stop writing**. If you are at a loss, you can just write "Although I have nothing more to say on this subject, I have to keep on writing..."
- After **exactly** five minutes, stop writing;
- Read over what you have written;
- Summarise the main idea in a single sentence;
- Write this new sentence at the top of a second sheet of paper;
- Using this new sentence as a starting point, write again for five minutes, **Do not stop writing**;
- Read again what you have written;
- Summarise the main idea in a single sentence;
- Write this idea at the top of a third sheet of paper;
- Repeat the stages until you feel you have overcome the *writer's block*.
  At the end of this process you will realise that:
a) You have produced a great number of words in English;

b)   You have discovered what you wanted say on that particular subject

2.3.1.3. Focused Freewriting

Focused freewriting is a technique that offers you the benefits of freewriting while keeping your attention focused on the topic:

- Start with a definite topic;
- Write for five minutes;
- Read over what you have written;
- Circle any words, phrases and sentences that look potentially useful;
- Group these items either at the bottom of the page or on a separate sheet of paper.

Following is a portion of a student's focused freewriting around the topic *Robots - A Mixed Blessing*.

Illustration:
Students' Focused Freewriting (fragment)

(...) On the one hand robots are useful in industry because they (work full time) they have a very big (accuracy) and they can work in (dangerous places); they can also (increase production) and they use an (advanced technology), giving (products) a (better quality.)

On the other hand, they can have (malfunctions) and if a robot stops, the (whole production line can be stopped) After a period of time (robots must be replaced) because they do not last long.

This piece of freewriting was organised into the following notes meant to be expanded.

Robots

Advantages	Disadvantages
- work full time	- can have malfunctions

- work in dangerous places	- if a robots stops → the whole production line can stop
- lead to increased prod.	- do not last long - have to be replaced
- make better-quality prod.	

2.3.1.4. The 'Many Parts' Technique

This method for generating ideas consists in listing its parts and then making notes about the **uses** or **consequences** of some or of all the parts enlisted.

Illustration

e.g. What are the 'parts' (i.e. types) of robots?
1. automata
2. robotic systems
3. androids
4. cyborgs

One Part Explored

What are the uses of robotic systems?

- industry
  - production lines (welding)
  - materials handling
  - assembly (electronic parts)
  - inspection

- military
  - automatic pilot
  - defuse bombs
  - control modern weapons

- ocean   - explorer

- space   - lift satellites out of spacecrafts
  - put satellites into orbit
  - stationary observer
    - collect samples
    - take photos

- office   - clerk

```
                    - mail handler
- home      ⌠ - companion
            ⌡ - housekeeper    ⌠ - cleaning
                               ⌡ - cooking
```

What are the consequences of using robotic systems?
- higher productivity
- accuracy
- hard and dangerous work will not be performed by humans
- employees will be mostly knowledge workers
- possibility of totally replacing humans in industry
- unemployment
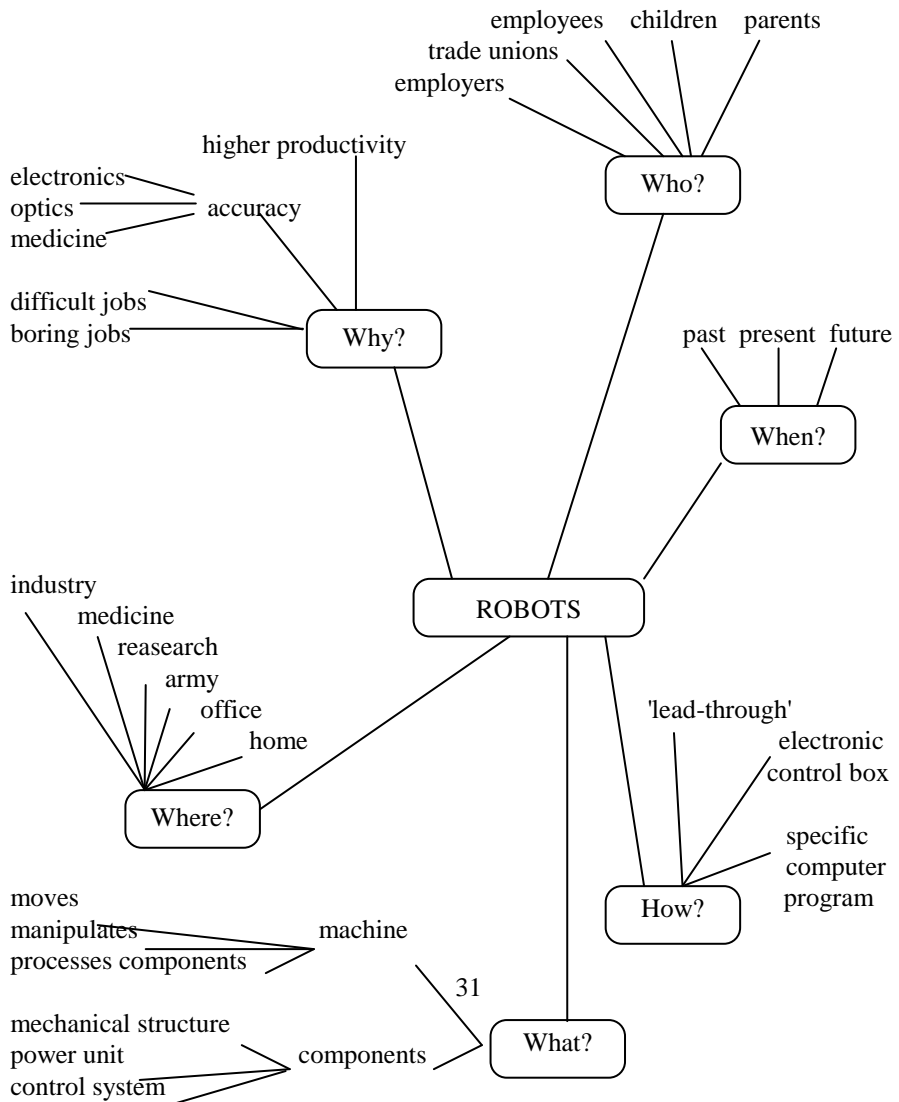- disasters (if one part of the system breaks, everything may fall apart)

2.3.1.5. Mapping Using the Journalist's Questions

This is a technique used both for generating and organising ideas. It is particularity useful if you enjoy thinking visually. Here are the steps you need to take if you apply this technique:

• Write the topic in the middle of the page;

• Circle the topic;

• Draw several short spokes from the circle (3-6);

• At the end of each spoke place one of the journalist's questions (*who, what, where, why, how*);

• Make a major branch off the spoke for each answer to a question. In answering these questions you can in fact *define, compare, contrast,* or *investigate cause and effect*;

• Working with each answer individually, pose one of the six journalist's questions again.

When you have completed such an activity, you will have a page that places ideas in relation to each other. Moreover the map distinguishes between major points (main branches) and supporting information (secondary branches).

Illustration:
Mapping Using the Journalist's Questions

employees   children   parents
trade unions
employers

Who?

higher productivity

electronics
optics   accuracy
medicine

difficult jobs
boring jobs   Why?

past present future

When?

ROBOTS

industry
medicine
reasearch
army
office
home

Where?

'lead-through'
electronic
control box

specific
computer
program

How?

moves
manipulates   machine
processes components

31

mechanical structure
power unit   components
control system

What?

2.3.2. Organising

As we have seen from the techniques presented above, *generating* ideas is closely linked with the next step: **the planning process** which involves: *selecting, organising* and *expanding* information.

If the process of generating ideas is a non-judgemental activity (all ideas are enlisted, no criticism or evaluation is made), the organising stage presupposes the existence of a critical eye: the ideas already generated are analysed, evaluated and selected according to various criteria.

Below are some questions writers could have in mind when selecting ideas to be included in their piece of writing from among those generated earlier. Match each question with the suitable criterion:	
Questions	**Criteria**
1. Is this item appropriate to the topic?	a. Reader appropriateness
2. Is this item appropriate for my virtual readers?	b. Purpose appropriateness.
3. Is this item relevant to the point I want to make?	c. Fruitfulness.
4. Is this item productive (can it be expanded?)	d. Topic appropriateness

Organising ideas also involves deciding on the order in which you wish to present them. As shown earlier, 'maps' based on

the journalist's questions may prove very useful because of two main reasons:

• they help you 'visualise' ideas in relation to one another;
• they help you distinguish between major points and supporting information.

As the writing process unfolds, organisation will move from a global level to a local one, involving decisions about sentence structure from a grammatical, but also information-packaging point of view. It will also involve decision about the cohesive links between sentences and paragraphs.

Since various types of texts present different organisational patterns, we shall discuss again this issue later, with specific examples.

So far, we have discussed two processes (**generating** and **organising** ideas, which are part of the **pre-writing** or **planning** phase. As we have seen, **planning** may be done in various ways, from jotting down several ideas to focused writing or more elaborates notes. All these should take into account the *topic*, the *purpose / function*, the *audience*. However, even when detailed outlines are prepared, writers often change their ideas while writing and reshape their plans. Ideas which are already generated and even put on paper are constantly evaluated, expanded, reformulated or simply dropped out. As Widdowson (1983) says, "In writing one so frequently arrives at a destination not originally envisaged by a route not planned for in the original itinerary."

That is why initial plans should not be seen as straight jackets or as routes from which no deviation is possible: if the road is too crowded or if there are road works ahead, we can choose an alternative way; similarly, if we come across a beautiful landscape, we can slow down or even stop to admire it. The writing process is a continuous interplay between *writing* as such and *thinking about writing*. This interconnection is suggested in our diagram by the double arrow between '*generating*' and '*evaluating*' on the one hand, and '*organising*' and '*drafting*' on the other.

2.3.3. Drafting

Drafting refers to that phase in the writing process that consists in transferring ideas on to paper or on a word processor. While native speakers concentrate at this stage mostly on the content, on *what* they want to say, non-native speakers concentrate both on *what* to say and on *how* to say it in the foreign language.

In such cases, the first draft may include words and expressions both in L2 (the target language) and in L1 (the writer's native language). The words and expressions in L1 will then be translated into L2. Writers who are more proficient in the target language need not do this, because they can transfer their ideas *directly* into L2, just like native speakers.

Let us not forget that writing is a *recursive* process. While writing the first draft, the writer often stops to read over, evaluate and review, to revise plans, introduce new ideas or rearrange those already expressed, to reformulate or simply cut out certain portions of the text. Very few writers, in fact, produce a good piece of writing without making **several drafts**. Think of well-known poets and prose writers. When visiting their memorials houses you surely saw different versions of one and the same poem or of one and the same page from a novel or short story. This part of the writing process should be seen in connection with **evaluating** and **revising**.

2.3.4. Evaluating and Revising

These are activities in which the writer decides to devote a period of time to a systematic examination and improvement of the text. These activities are usually performed when the first draft has already been written.

Evaluating presupposes reading through your own work with an objective eye, i.e. with the eyes of an unknown audience. It is quite hard to get out of one's own skin and be objective. As Teresa O' Brien says (1989/1996: 18), "the writer often reads what s/he intended rather than what is actually there". This is also true of

proof-reading for grammar, spelling and punctuation. In order to ensure an objective evaluation, it is good to use another reader.

Some questions that may be asked at this stage are the following:

• Is the information clearly presented?

• Have I missed any important information?

• Are the paragraphs arranged in the proper order?

• Are the linking words well used? Is the reader guided through the text?

• Are there any *'blank'* spots or ambiguities?

• Are the tone and formality level appropriate to the topic, purpose and audience?

• Is the vocabulary well-chosen, taking into account the type of text and the audience?

• Are there words, phrases or sentences that do not say much or are too repetitive?

• Are there any grammar, spelling or punctuation mistakes?

Revising is placed in central position in the diagram, because it can occur in brief episodes at any stage, interrupting other parts of the process. It is connected to **editing**, i.e. making the final readjustments, reformulating and checking accuracy so that the text might be maximally accessible to the reader.

There are four main types of **editing**:

• Editing for reading understanding (wrong words, ambiguities);

• Editing for clear meaning (unusual word, missing context);

• Editing for standard language conventions (offensive tone, consistency, density of information);

• Editing for accuracy/proof-reading (grammar, spelling, punctuation, repetition).

2.4. Summary

In this unit we introduced and defined the terms *process* and *product* in connection with written communication. The unit focused on *the process of writing*. Several models of the writing

process were presented and discussed (those proposed by Tricia Hedge, Ron White and Teresa O' Brien). We then suggested another model of the writing process, which might better account for the recursive nature of this activity, as well as for the role played by the affective factors. The reason was that awareness and understanding of this process could help you visualise both the route you need to follow and the final product the text. Using the diagram as a framework, the various processes involved in writing were presented and analysed. Several practical techniques for generating and organising ideas were also suggested.

2.5. Keywords

affective plane	generating ideas
brainstorming	mapping
cognitive plane	organising
draft	process
editing	product
evaluating	proof-reading
focused freewriting	revising
freewriting	

2.6. Activities

1. *Some of the phrases below refer to the process of writing, others to the product. Mark with a tick (√) those that refer to the process.*

1. revising
2. reader-friendly
3. well organised
4. imagining the reader
5. accurate spelling
6. narrow range of vocabulary
7. generating ideas
8. many grammar mistakes
9. rearranging and expanding ideas

10. too many repetitions
11. revising plans
12. wrong word order

2. *Which of the following elements are specific to you as a writer (of laboratory reports, academic essays, summaries etc.)?*
Tick (√) where appropriate:

I usually:
1. read the title carefully
2. imagine the reader (the teacher, an examiner, a friend, a colleague)
3. generate ideas
4. devise a plan
5. write the first draft
6. revise ideas and redraft
7. read the text with an objective eye to see if it is clear enough
8. proof-read in order to correct possible grammar and spelling mistakes

3. *You have been asked to write an article for a students' magazine on the following issue:*
Will electronic communications replace face-to-face communication?
Use
a) the focused freewriting technique
b) the mapping technique
in order to generate and organise your ideas.
The two contrasting views below might help you clarify your own ideas:

A new working culture is forming around the networks. People who have worked in relative isolation now enter into conversations from which they felt excluded. The electronic communities do not care who you are. They care only for the

Appearances cannot be disregarded completely. Nor should communications remain disembodied forever.
Face-to-face meetings are invaluable for the many nonverbal clues to the personality and behaviour of another person.

quality of your information and your ideas.	Moreover, such meetings can also facilitate camaraderie and romance.
Judy E.Myers, Thomas C.Wilson, John H.Linehard	Jay O' Leary

4. Below you will find a draft written by a student in the process of producing an essay on the advantages and disadvantages of robotisation. Match each numbered changes (1-6) to **one** or **several** types of editing (a - d) discussed about in this chapter. In order to make it easier for you they are presented again here:

a) editing for reading understanding (wrong words, ambiguities)
b) editing for clear meaning (unusual word, missing context)
c) editing for standard language conventions (offensive tone, consistency, density of information)
d) editing for accuracy/proof-reading (grammar, spelling, punctuation, repetition).

Robots are used in all kinds of domains: science, medicine, electronics. 3**1**The use of them**Their use** has expanded in the past few years. 3**2**From my point of view, I think that**In my opinion** robots are 3**3**usefull**useful**, but at the same time they have many disadvantages. First of all, robots are very accurate. That is why they are used in medicine, where the life of people depends on them. With their help, science has made 3**4**many discoveries**?**. They do not breathe air and are very resistant, and because of that they are used in underwater and space research. Also robots work in very dangerous places and do not get tired, sick, do not ask for food. On the other hand robots can 3**5**do one task at a time**?**. They cost a lot and if one of them stops the 3**6**hole**whole** production stops. If they have a malfunction, an entire disaster can happen.

1	2	3	4	5	6

3 WRITING AS A PRODUCT

The previous chapter has focused on the *how*, on the process of writing as such. This chapter is devoted to the *what*, the product of writing, i.e. the text. Its purpose is to present characteristic features of various types of writing and various text-types. Understanding and recognising such characteristics will help you become aware of what is typical in texts belonging to a certain category and will hopefully make you take these typical features into account whenever you have to write a particular type of text.

3.1.   Reasons for Writing

In order to perform an action, we are usually motivated in some way, we have a **reason** to do it. For example, people may attend colleges or universities for various reasons: to increase their knowledge, to prepare for a future career, to have new experiences, to meet new people .

Likewise, we could say that people write for various reasons. In real-life situations, you write letters to friends to give news about you, to apologise, to make or to accept an invitation ; you write shopping lists in order to remember what to buy; you write CV' s and letters of application when you want to apply for a certain job.

Some kinds of texts have mainly a pedagogical purpose, i.e. they are written for the teacher/the examiner and are not usually met in real life.

> *Below there is a table with various types of texts. For each type **tick** (√) the appropriate column.*

| Text Type	Real-life Purpose	Pedagogical Purpose
compositions		
instructions		
recipes		
letters to friends		
summaries		
CV's		
notes (from reading / listening)		
stories		
advertisements		
telephone message		

3.2. Types of Writing

There are many types of writing, therefore it is only natural that we should try and classify them. Various authors have tried to classify writing in different ways. Starting from the communication triangle that establishes relationships between writer, reader and subject-matter. Kinneavy (1983:121-138), following Britton, finds three main categories of writing: **expressive**, **poetic** and **transactional**, the third one being subdivided into **persuasive** and **informative** (see diagram below):

40
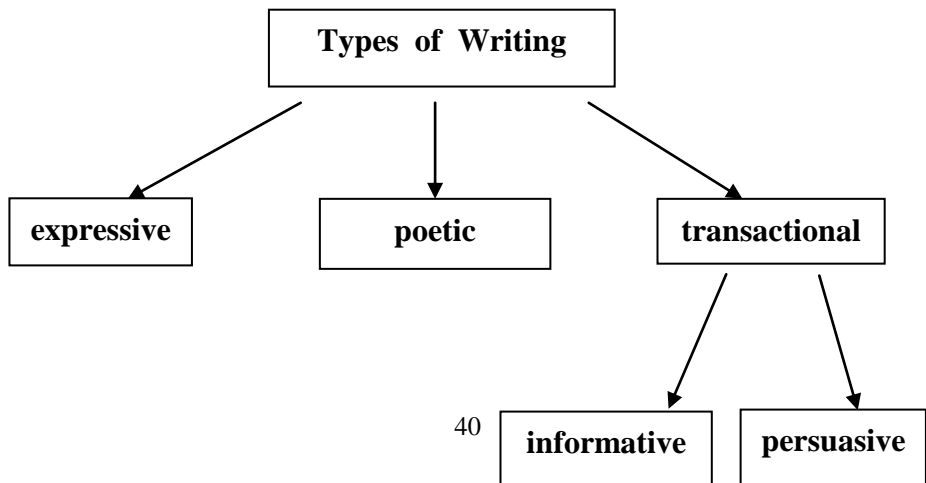
Expressive writing is personal, written for oneself or for someone close. The focus is on the writer (e.g. *diaries*, *personal letters*). The communication triangle for expressive writing will look like this:
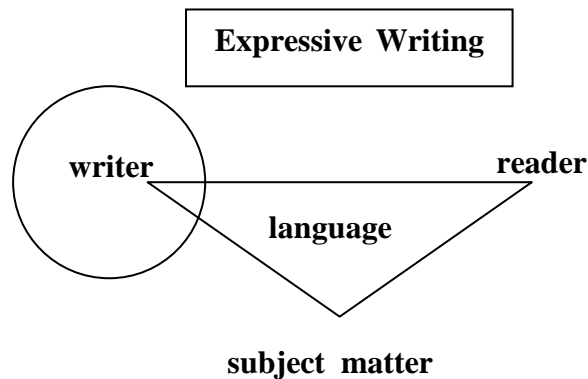

Poetic writing is focused on language and form (e.g. *poems, stories, novels, plays*). Therefore, the communication triangle will look like the one below:
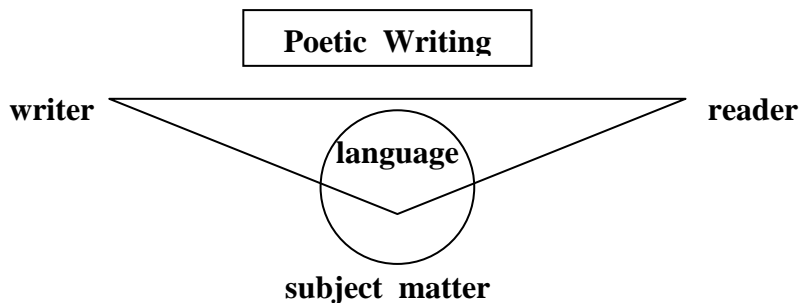
Transactional writing is used 'for getting things done'. It can be further subdivided into **informative**, whose focus is on the subject matter (e.g. *business letters, reports, instructions to machines*) and **persuasive**, whose focus is on both subject matter and reader (e.g. *advertisements, news, editorials*).

writer language reader	writer language reader
subject matter	subject matter
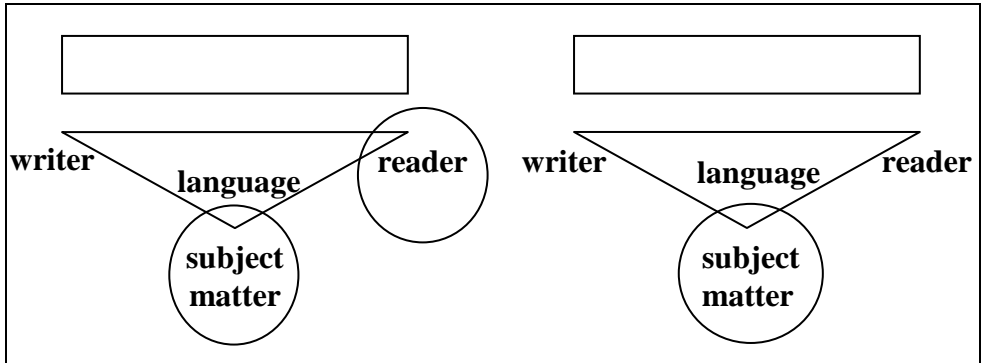
Those categories can be further subdivided into several subcategories or 'modes'. This again is done in different ways by different authors. Mc Eldowney (1976), for example, suggests four subdivisions or 'modes' with reference to transactional writing:

• **Introduction**

• **Stative description** about how things are or were

• **Dynamic description** − about natural and humanly controlled processes

• **Narrative.**

In Mc Eldowney' s opinion, **argumentative exposition** is not another mode. It is rather a combination of instruction, description and narrative.

3.3. Text - Types: Characteristic Features

A question comes to our mind: why is it necessary to have such classifications ? The answer is quite simple: each different type uses language in a slight different way. For example, *narrative* typically involves the use of simple past active or passive ; *dynamic description* often involves the use of present simple passive voice etc.

These types or 'modes' of writing cover various types of texts which have their own characteristics, but share at the same time certain features with other types of texts that belong to the same writing 'mode'. For example, we could say that all narratives give an account of events in the past, usually in the sequence in which they happened (chronological order). Thus, under the heading *narrative*, we could place various text-types;

Narrative

Expressive	Transactional	Poetic
a holiday journal	a newspaper report a history text	a short story a ballad

Similarly, we could say that instructions contain information which is necessary to carry out a particular task. They typically involve the use of the imperative, *should* or *must*. Some examples of text-types that would fit under the heading *instruction* are the following:

Instruction

Expressive	Transactional	Poetic
a list of things to be done by oneself	user' s manual cooking recipes	' *If* ' by Rudyard Kipling

Try to list examples that would fall under the heading.

Description

Expressive	Transactional	Poetic

The fact that we can recognise text-types taken out of their context tells us that all texts belonging to a certain type must share some features that distinguish them from other text-types.

Let us analyse the following type of text:

Recent years have seen increased emphasis being placed on the notion of genre in the language learning classroom. Less attention, however, has been given to the notion of 'text type'. This article argues that the distinction between 'genre' and 'text type' is an important and useful one. To illustrate this distinction, an analysis is presented of a number of texts from two genre-based coursebooks, one which focuses on adult second language literacy development, and another which focuses on writing in an academic context. The article also suggests ways in which the relationship between genres and text types may be exploited in the language learning classroom.

<div align="right">Brian Paltridge</div>

This text is a **research article abstract**. An **abstract** is placed before the research paper or article and is meant to offer the reader an accurate and concise representation of the full article.

Below are some features that can be analysed:

1. typographical	- how information is laid out
2. discourse organisation	- sequenced - conceptual – general-particular – cause-effect
3. paragraphing	- short, long or no divisions
4. sentence structure and length	- simple, compound, complex sentences

5. cohesion - pronouns, conjunctions

6. verbs - stative / dynamic
- present / past / future
- active / passive

7. nouns and noun groups - short / long

Here is how the abstract could be analysed. Match the letters (a-h)   with the features (1-8) presented above.
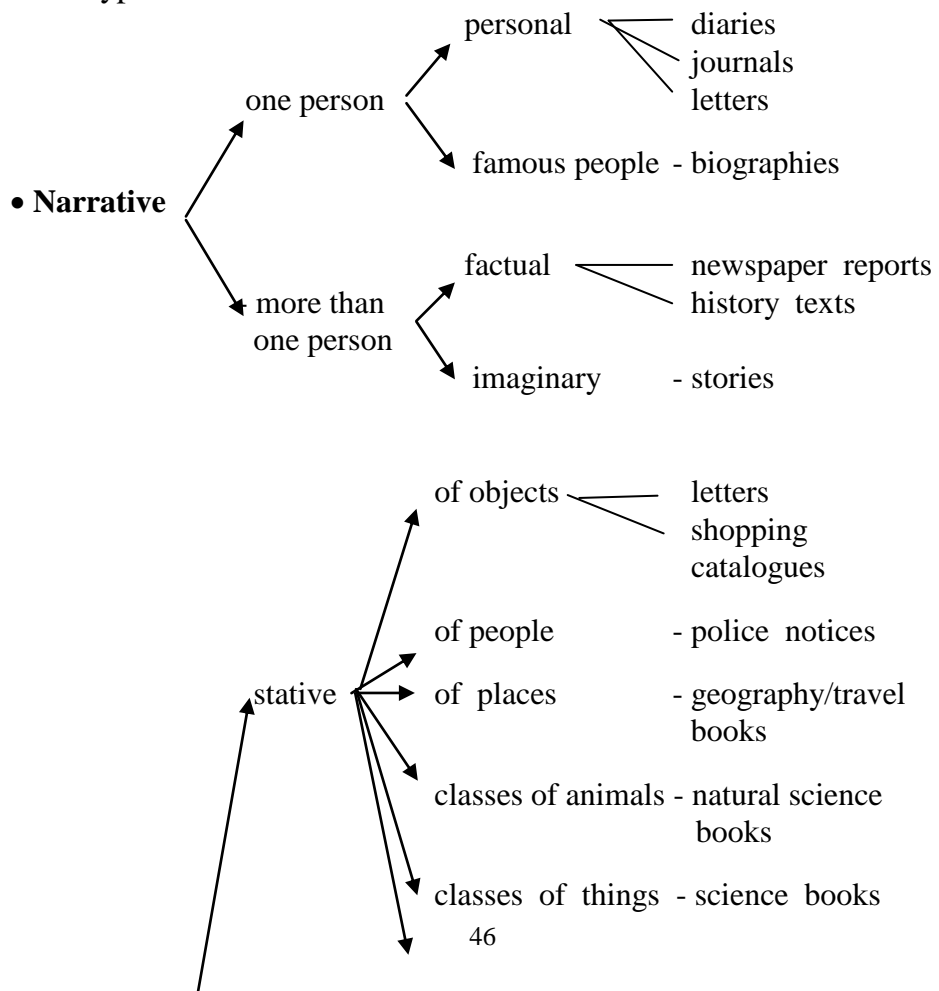
a) conceptual (thesis - support)

b) some complex   - *language learning classroom*
   noun groups   - *two genre - based coursebooks*
                   - *adult second language literacy development*

c) • mostly stative
   • Present Perfect active and passive; Present Simple active and passive

d) • one paragraph only

e) • italics
   • text written in one size of print

f) • rather long
   • complex
   • finite and non-finite clauses

g) • linking words: *however, that, to, and*
   • repetition of lexical items: *distinction, focuses, article*
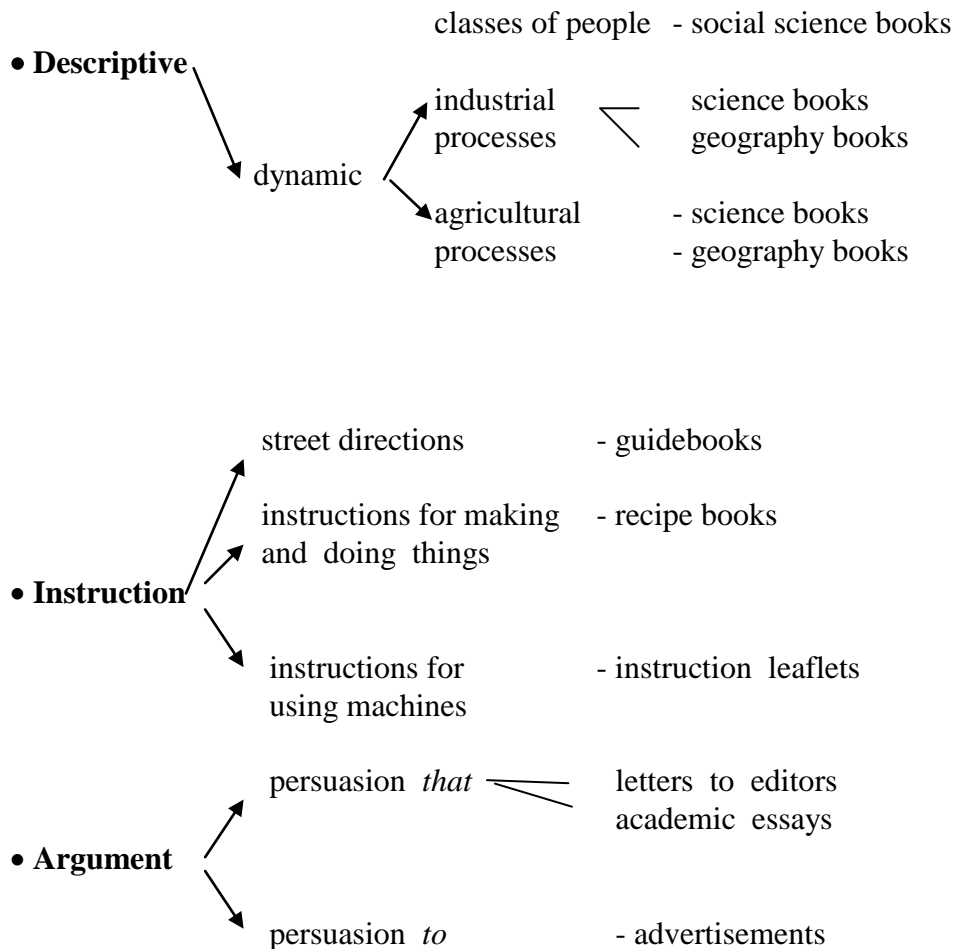   • syntactic parallelism: *one which focuses ... , another which focuses*

From the point of view of **how** information is presented, we can distinguish the following structural organisation:

1. establishing field - stating current knowledge (sentence 1)
2. preparing for present research - indicating a gap (sentence 2)
3. introducing purpose - the author's hypothesis (sentences 3, 5)
4. describing methodology - indicating the procedures used and the scope of the research being reported (sentence 4).

Although some of these characteristics may differ from one abstract to another, the main features will be shared by all texts that fall under this heading.

Here follows a classification of types and sub-types of writing adapted from O'Brien (1989/1996:19) with examples of corresponding text - types:

personal — diaries
journals
letters

one person

famous people - biographies

• **Narrative**

factual — newspaper reports
history texts

more than one person

imaginary   - stories

of objects — letters
shopping catalogues

of people   - police notices

stative   of places   - geography/travel books

classes of animals - natural science books

classes of things - science books

- **Descriptive** → dynamic

classes of people - social science books

industrial processes — science books / geography books

agricultural processes - science books - geography books

- **Instruction**

street directions - guidebooks

instructions for making and doing things - recipe books

instructions for using machines - instruction leaflets

- **Argument**

persuasion *that* — letters to editors / academic essays

persuasion *to* - advertisements

3.4. Summary

This chapter started with an enquiry into the reasons that prompt people to write. In real life we write with a definite *purpose* in mind (to inform, to persuade, to complain) and for a particular *audience* (an individual, a group of persons, an institution). These two questions *why?* and *who for?* will influence *what* we say and *how* we say it (content, style, organisation). In the language classroom, however, a good deal of writing is undertaken as an aid to learning (e.g. to reinforce new structures or vocabulary). Such writing usually stops at sentence level and its purpose is mainly

pedagogical − *writing to learn the language*. After making this distinction between real-life and pedagogical purposes in writing, we presented and discussed Kinneavy' s typology of writing based on the communication triangle − the relationship between *writer, reader* and *subject matter*. Three main types have been discerned: *expressive, poetic* and *transactional*, the last one being subdivided into *persuasive* and *informative*. These categories can be further subdivided into several subcategories or 'modes', which have recognisable characteristic features. The categories and subcategories cover various kinds of texts which also have their own characteristics. A list of features was presented, which can serve as a framework for examining different text-types. This was exemplified with the analysis of a specific type of text**:** *a research article abstract*.

3.5. Keywords
communication triangle
description
expressive writing
instruction
narrative
poetic writing
transactional writing

3.6. Activities
1. *Read the following texts or parts of texts. Place the number corresponding to each text under the proper heading..*

Expressive	Poetic	Transactional (informative)	Transactional (persuasive)

1. The installation of the robot in the library in Örnsköldsvik in northern Sweden was preceded by	**2.** I passed all the other courses that I took at my University, but I could never pass botany. This was

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a state-funded investigation into working conditions in libraries. It was found that, on an average working day, staff taking back books go through motions that involve 32,000 movements of the wrist and arm. The loads and the repetition of the movements are a known occupational hazard and can cause serious damage to the thumbs, wrists, elbows and shoulders as well as to the neck and back.

Following up on the study, ways and means of improving the working conditions were proposed and their practicability checked. An industrial robot seemed to be especially well suited for handling the books, as it is relatively easy to translate the wrist and arm movements of the library staff into robotized motion.

because all botany students had to spend several hours a week in a laboratory looking through a microscope at plant cells, and I could never see through a microscope. I never once saw a cell through a microscope. This used to enrage my instructor. He would wander around the laboratory pleased with the progress all the students were making in drawing the involved and, so I am told, interesting structure of flowercells, until he came to me, I would just be standing there.

3. ALWAYS
Take care to fit your batteries correctly, observing the *plus* and *minus* marks on the battery and appliance. Incorrect fitting can cause leakage or, in extreme cases, fire or even an explosion.
ALWAYS
Replace the whole set of batteries at one time, taking car

4. I got up at 6:30 a.m. Then I washed and got dressed. At 8 a.m. I had breakfast. Luckily, I have two classes today, so I can enjoy the fine weather and go for a walk in the park.

note to mix old and new batteries or batteries of different types, since this can result in leakage or, in extreme cases, fire or even an explosion.

2. *Read the texts below. For each text, place ticks (√) in the appropriate places on the table:*

	Instructional	**Description**	**Narrative**
Text 1			
Text 2			
Text 3			
Text 4			
Text 5			

1. Stimulus and Response in Physical Systems

The ideas of stimulus and response are basic to one concept of a physical world.

In electrical engineering it is possible to isolate the stimulus and to measure the responses. The input stimulus represents energy supplied to the system by an external source, and the output response represents the utilisation of energy at some other point. The idealised system itself is called a *circuit*, or a *network*.

In many networks the output response is directly proportional to the input stimulus. For example, if the input is doubled, the output also doubles. Networks which possess this property are called *linear*.

2. As soon as humans moved from a barter economy to a monetary economy, the need for numbers, computation, and the keeping of records became apparent. As early as 3000 B.C., numbers were in use in some parts of the world. The first real computational aid, the abacus, was developed in China as early as 2600 B.C. (by some accounts) and moved to Greece and Egypt by about 1000 B.C. Arabic numbers and the concept of zero were also developed during this very early period of human history.

3. Fire and Other Emergencies

In the event of the alarm sounding continuously in one part of the library, readers should move to the safe part of the building. Readers with mobility difficulties must leave the building at this point. If help is not immediately available, ring the Front Lodge (3713) for assistance.

4. Mozzarella Pasta Penne

1. Cook the pasta in boiling water for 10 minutes, until just tender.
2. Meanwhile heat the tomatoes and oil in a pan, breaking down the tomatoes gently with a wooden spoon.
3. Add the mozzarella, half the parmesan, basil and seasoning to taste. Bring to the boil and remove from the heat.
4. Drain the pasta and place in a 900 ml ovenproof dish.
5. Pour the sauce over the pasta, and mix well. Sprinkle with remaining parmesan and place in a preheated oven.

3. *Where do you think the texts/portions of texts above are taken from?*

4. *Use the list of features given in this chapter to analyse text 1 (Activity 2) along the lines of analysis of the research article abstract.*

4 NOTE-MAKING

In Unit **1** we defined the process of communication, we analysed the factors involved in this process and we drew a comparison between oral and written communication. **Units 2** and **3** focused on the process of writing and on the product of writing, respectively. These chapters included a theoretical and a practical section. The following chapters will be more practice-oriented, their purpose being that of giving you practical tips on the content, layout, organisational structure and style of various types of writing and texts.

We shall start with one of the common activities you perform either as students or professionals.

4.1. Definition. Reasons

Note-making implies writing the essential ideas, the main points and their concise presentation. The way you organise your notes and the information included will depend largely on your purpose. Irrespective of their purpose, notes should be **concise**.

As students, you need to take notes while you are listening to people speaking (e.g. while listening to a lecture delivered by one of your professors) or while reading (a coursebook, an article in a journal or in a magazine). Professionals may also take notes while listening or reading. A doctor, for example, may take notes while listening to a patient speaking about his/her symptoms or while reading an article in a medical journal.

Before going on, try to answer the following questions:
1. Why do **you** take notes? Think of as many reasons as you can.
2. Why do engineers take notes?
List the reasons you have found in the table below.

My reasons	An engineer' s reasons for making notes	General reasons for making notes

Are there any similar reasons in the three columns?
Are there any differences?

People take notes in different ways. There is no **right way** to take notes.

How do you take notes? Think of the way you take notes when
a) listening to a lecture
b) reading a scientific article in order to write a report.
Do you use any symbols or abbreviations?

4.2. Characteristics of Notes

As shown before, notes are written in a **concise** manner. This means that when making notes

• we generally use **abbreviations**;

• we make use of certain **symbols**;

• we generally **omit grammatical words** (see **Unit 1**), such as articles, auxiliary verbs, prepositions, conjunctions.

Below you can see some abbreviations and symbols used by English speakers. Match them with the corresponding words/phrases.

Abbreviations		Symbols	
1. e.g. a) number		9. = i) less than	
2. i.e. b) compare with		10. ≈ j) more than	
3. viz. c) that is		11. ≠ k) equals (is the same as)	
4. cf. d) take note		12. → l) is not the same as	
5. etc. e) for example		13. ← m) results from	
6. NB f) and so on		14. > n) is proportional to	
7. no g) pages		15. < o) is approximately equal to	
8. pp h) namely		16. α p) causes	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

In engineering, as in any other field of activity, many specific abbreviations and symbols are used. *Can you list 5 abbreviations and 5 symbols connected to your field of study?*

Using abbreviations, symbols and omitting certain words or sentences will help you take notes more quickly. This is especially important when you have to **take notes from lectures**. In such cases writing takes place in real time; therefore, unless the professor dictates the lecture (which is unusual), it is quite hard (if not impossible) to take notes *verbatim* (word by word). The results of such an unfortunate attempt will be blank spaces and illegible handwriting. On the other hand this habit might turn you into an automaton: instead of thinking about the ideas in the lecture, you
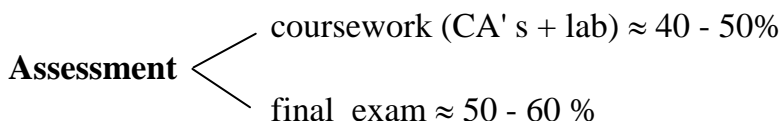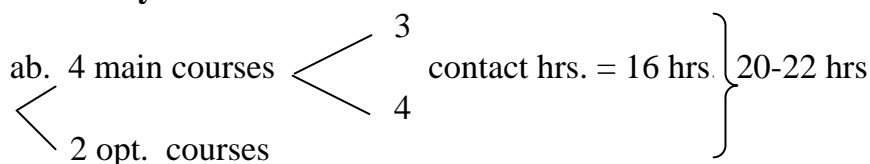
will be busy writing each and every word. Let us not forget that an important function of taking notes from lectures, even when the course is available, is to store the information visually, auditorily and kinesthetically (i.e. by means of movement).

Here are two sets of notes taken during part of a lecture on **Higher Education in Britain** *by two different students. Which do you prefer and why?*

a) **Entry requir.**

Ss apply $\rightarrow$ interview (univ. sets requir.) $\rightarrow$ Ss know ab. standards

   Weekly load

ab. 4 main courses $\Big\langle$ 3 / 4   contact hrs. = 16 hrs. $\Big\}$ 20-22 hrs

   2 opt. courses

   Assessment $\Big\langle$ coursework (CA' s + lab) $\approx$ 40 - 50% / final exam $\approx$ 50 - 60 %

b) transparent system, i.e. - students apply for univ.
 S. is invited for an interview, the univ. will set requirements and the S. will go away knowing what to do this acts as a good incentive
 Ss. have ab. 4 main courses (3-4 contact hours): and 2 optional courses – so in total = 20 - 22 contact hours/week
 Assessment – smt. cont. assessment testing cumulative knowledge (about 40-50 % of the final grade) and final exam will represent about 50 - 60%.

The examples above show not only the importance of using abbreviations, symbols or shortened forms, but also the importance of **organising** one's notes in a **clear** manner.

4.3. Organising Notes

Notes can be organised in different ways, depending on your own *style* and on the *purpose* you have in mind. However, as shown above, notes should be **clear**, i.e. you should be able to **understand** them if you read them after a few days.

4.3.1. Annotations

One simple way of organising your notes is to make **annotations**. The word, coming from Latin, refers to critical and explanatory notes or comments which may be added on the margins of the page when reading a book, an article etc. They may consist in isolated words or symbols or may develop into expanded comments. One advantage of making annotations is that you can *'translate'* your thoughts onto paper the moment they appear in your mind. One problem is that annotations can easily turn into **digressions**, which although sometimes very interesting, may not prove useful to your purpose. Another problem is that you cannot make annotations on the margins of a book or article you have borrowed.

However, if you can keep your annotations short and to the point, they can be used as a valuable tool for reading in a critical, active manner. On the other hand, annotations can be further on developed into expanded notes, explanations, or critical comments.

Illustration

Here are some annotations made by a student who has read a text giving advice on how to write a good CV.

What is required is a punchy, precise and well-presented summary of your strengths and achievements. It's a simple thing to get right, but you have to know how.	qualities of a good CV
A handwritten CV is unacceptable, typed is better and one composed on a word	**not** handwritten best word-

processor is best. Remember, keep it short! Busy employers do not have time to read a rambling narrative, and won' t be impressed by one. They want facts: qualifications, skills and experience – and should be able to see at a glance exactly what you have to offer them.

processed
short
should include
facts

A good CV should run to no more than two pages of A4. This applies right the way up to senior management level – so those with far less experience (that means you, graduates!) should limit themselves to a single page.

length $\rightarrow$ 2 A4 pp

The layout should be clear and easy on the eye. Leave wide margins on either side of the page. Use bold type for headings and bullet points for noteworthy achievements.

layout – clear
wide margins
bold and bullets

4.3.2. Linear Notes
Another way is to make **linear notes** on paper. In this case *bullets, hyphens* or other symbols can be used to introduce the main ideas. The most important words can be made prominent by *underlining* them or by using a *highlighter*.

Illustration
- CV General Characteristics
- punchy
- precise
- well-presented
- includes facts   - qualif.
                        - skills

<div align="center">- exp.</div>

- **Length**
- short
- 1-2 A4 pp

- **Layout**
- clear
- easy on the eye
- bold - headings
- bullets - imp. achiev.

4.3.3. Mapping

We have already talked about mapping as a technique for generating ideas. **Mapping** can also be used as a technique for organising notes. Notes written in graphic form are considered to be very helpful because: a) they can be written very quickly and b) they can be recalled quite easily.

Illustration
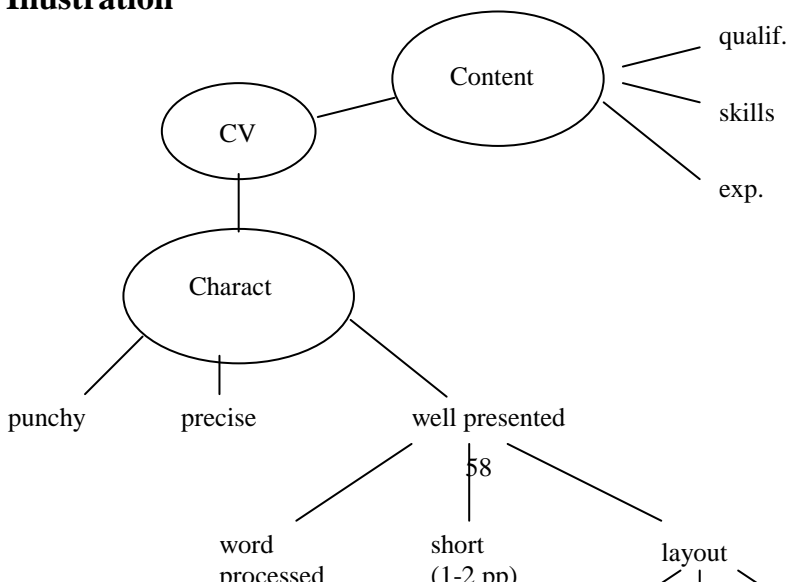
4.3.4. Taking Notes in Complete Sentences

When writing a research paper or article, people may take notes from the sources (articles, books, coursebooks) they examine in complete sentences or texts. Such notes can be written in notebooks, on sheets of paper or on notecards. There are three main methods for taking notes from sources:

- summarising
- paraphrasing
- quoting

A **summary** is a relatively brief, objective account in your own words, of the main ideas in a text or part of a text. Its purpose is twofold:

- to extract the main points from a relatively long passage
- to condense information essential to your own essay or piece of research

A **paraphrase** is a restatement, or reformulation, in your own words, of a passage of text. While a summary is always shorter than the source, a paraphrase can be:

a) *the same length* as the source passage;
b) *shorter* than the original;
c) *longer* than the source passage.

The length of a paraphrase depends on your purpose and on the density of information in the source passage. A paraphrase is used whenever you need:

- to clarify complex ideas/difficult language in a short passage;

• to present all the points in the original (major and minor) in your own words.

A **quotation** or **quote** is the exact rendering of a source passage. Quotations must be placed between quotation marks (" ") and the source must be acknowledged. There are three main situations in which you should quote:

• when you want to support your ideas and enhance your credibility by drawing on the words of an authority on that subject;

• when, on the contrary, you want to discredit an idea from a certain source;

• when the language of the source is particularly effective.

Use the information above and place a tick (√) in the appropriate column(s) if the characteristic applies. One has been done for you.	Length			Choice of words	
	Shorter than source passage	Longer than source passage	As long as source passage	Your own words	Exact words in the source
summary	√				
paraphrase					
quotation					

Consider the following passage:

Telemetering

The branch of engineering concerned with the presentation of measured data at a location remote from the source of the data; also called telemetry. Telemetry encompasses all remote metering, whether the distances involved be many miles, as in space flights, or only a few feet, as in the measurement of reactivity in the core of a nuclear reactor.

Telemetry involves three separate functions: (1) generation of a signal (electrical or otherwise), which measures the pertinent physical variable and is in suitable form for transmission; (2) transmission of the information to the remote location; and (3) conversion of the data into a form appropriate for display, recording, or application for further data processing equipment.

Telemetry systems are conventionally classified according to the transmission medium. Although the information can be transmitted in a variety of forms (such as the brightness of a modulated light beam), the great majority of systems fall into three categories: mechanical, electrical and radio telemetry.

Mechanical telemetry, involving mechanical coupling between the points of measurement and of data utilization, is generally restricted to short distances because of the high attenuation of mechanical media, the low velocity of propagation, the difficulty of constructing efficient and simple mechanical amplifiers, and the requirement of a continuous mechanical coupling medium throughout the transmission path.

The term electrical telemetry is utilized in contrast to radio telemetry and refers to wired telemetry systems in which the information is transmitted by variations of a voltage or current in the electric circuit. Modern electrical telemetry systems often involve complex electronic equipment, as when the information is transmitted (over wires) in the form of a television picture.

Radio telemetry, originally used to telemeter information from weather balloons to ground observers, employs electromagnetic radiation as the transmission means. As a basic element of missile and space technology, radio telemetry is used to obtain from uncrewed space vehicles, data on environmental conditions (temperature, air density, radiation density, and bombardment by micrometeorites) as well as on performance of the vehicle itself (strain, temperature and vibration).

<div style="text-align: right">John Truxal</div>

Here is how the information from the original can be **summarised**, **paraphrased** *and* **quoted**. *Place the suitable label (***summary**, **paraphrase**, **quote***) in the boxes provided:*

1. [ ]

Telemetering, also called telemetry, is a branch of engineering concerned with remote metering. It involves a) the generation of a signal meant to measure the physical variable; b) the transmission of that signal to the remote location and c) the conversion of the data into a form that can be displayed, recorded or applied to further data-processing equipment.

According to the transmission medium, telemetry systems can be divided into three categories: mechanical, electrical and radio telemetry.

Mechanical telemetry is restricted to short distance and involves the mechanical coupling between the points of measurement and those of data utilisation. In electrical telemetry systems information is transmitted over wires by variations of voltage or current. Radio telemetry uses electromagnetic radiation as transmission means. Radio telemetry systems are used in space technology to obtain data on outer space environmental conditions or on the performance of uncrewed space vehicles.

2. [ ]

Telemetering is "[t]he branch of engineering concerned with the presentation of measured data at a location remote from the source of the data." (Truxal, 1987:319).

3. [ ]

Telemetering, or telemetry, which refers to anything that involves remote metering, has three distinct functions: the generation of a signal meant to measure the physical variable the transmission of that signal to the remote location and the conversion of the data into a manageable form. According to the transmission medium three kinds of telemetering systems − mechanical electrical and radio − can be discerned.

As already shown, there are various ways of taking and organising notes. Your choice will depend on your own style and on the purpose. This means that you should include only information that is relevant to your purpose. In real life situations, notes are a means to an end; this end or purpose will influence both the way you organise your notes and their information content.

4.4. Summary

This chapter focused on *note-making*. *Notes* can be taken while listening to someone speaking or while reading a text. People may have different reasons for making notes. Such reasons influence the *length* of notes, the *information* included, as well as the *manner* in which you organise your notes. There are various techniques used for making and organising notes: simple or expanded *annotations, notes written in linear form, mapping, notes written in complete sentences*. The last category includes notes that are generally used for documenting research.

Irrespective of their type, notes should be *clear*, *concise* and *relevant* for your purpose.

4.5. Keywords
abbreviation
annotation
mapping
note-making
paraphrase
quotation
summary

4.6. Activities
1. *Read the following passage from a course on circuit theory. Make notes in a)* **linear** *and b)* **graphic** *form.*

There are three basic types of linear circuit elements. A *resistor* is an element which dissipates energy (as heat or in some other way). An *inductor* stores energy by virtue of a current through

it. A *capacitor* stores energy by virtue of a voltage existing across it.

      Resistance. Electrical elements which dissipate energy are called *resistors.* The idealised circuit models are called *resistances*. Typical examples of resistors are the heating elements in stoves, the filaments in electric light bulbs, and the copper wires used to bring electric power into our homes.

      Inductance. The electrical current which stores energy in association with a flow of current is called an *inductor*. The idealised circuit model for the inductor is called an *inductance*.

      Capacitance. An inductor is a device that stores energy by virtue of a current through it. A *capacitor* also stores energy, but here the energy storage is due to the voltage across the device, and is independent of the current through it. The idealised circuit model of a capacitor is called *capacitance*.

2. *Suppose you need the notes you have made to prepare for an exam. Which of these sets best summarises the text? In order to do this, try to reconstruct the main points of the text in **written form** from each set of notes without looking at the original text, then compare the results.*

3. *Swap your notes with a partner. Evaluate your partner' s notes against the checklist in the following table (tick (√) or use marks).*

	Clear	**Concise**	**Relevant information**
Set 1			
Set 2			

4. *Now take your notes back and reformulate or reorganise those that do not meet the criteria in the checklist above.*

5 WRITING AN ESSAY (I)

Although essay writing is not directly related to an engineer's professional needs, it represents a **must** for those who plan to take the TOEFL (Test of English as a Foreign Language) or the CPE (Certificate of Proficiency in English – the highest level qualification in the series of Cambridge General English Examinations). Another reason for introducing essay writing in this course is that it exemplifies both the *process* (the various stages involved in writing with the inherent movements back and forth) and the *product* (the final draft of the essay).

5.1.   Definition

Webster' s New Collegiate Dictionary (1980:387) defines an **essay** as "an analytic or interpretative literary composition, usually dealing with its subject from a limited or personal point of view". The term comes from the French *essayer* ('to try'). Generally speaking, an essay represents the writer' s attempt to present and support in an attractive and convincing manner his/her point of view on a certain philosophical, social, political, literary, or scientific issue, without claiming to solve the problem once and for all.

*Below are some opinions expressed by various people on the issue of age and university education. Read them carefully and try to decide what kind of people might have said each. Fill in the following table with the probable **Age** and **Occupation** of each person.*

	Age	Occupation
1		
2		
3		
4		

1. I think everyone has the right to attend a college or a university. I have met more mature students who could cope very well with faculty requirements and indeed seemed more serious and more interested in their studies than many younger students.

2. Let me put it this way: if older people chose to attend a university instead of working, we might run short of employees.

3. People should attend universities when they are young and have no obligations. Imagine a family in which both husband and wife spend their time working and studying. Who would take care of the children?

4. My opinion is that the age is not relevant . The important things are the intellectual capabilities and time devoted to study. There are professions in which people have to permanently upgrade their knowledge.

*What do you think of the opinions expressed? Do you agree or disagree? What made you complete the table the way you did? Is it right to assume that we can tell what a person' s opinion is by their **age** or **occupation**?*

5.2. Pre-Writing Strategies
5.2.1. Analysing the Question

The first step in writing an essay is to **analyse the question**. According to Hopkins (1989:67), essay titles can be analysed from three points of view:

• **the topic**, i.e. the general subject;

• **the focus**, i.e. the particular part of the subject you have to write about;

• **the comment**, i.e. a verb specifying what you need to do (Describe/Define/Compare/ Summarise)

---

*Analyse the following essay titles in terms of **topic, focus** and **comment**. One has been done for you.*

1. Discuss the effects of modern technology on the environment.
2. Compare life on campus to life in one own' s family.
3. Summarise the main arguments for and against large scale robotisation.

	Topic	**Focus**	**Comment**
1.	Modern technology	Effects on the environment	Discuss
2.			
3.			

5.2.2. Discovering and Generating Ideas
5.2.2.1. Using Background Knowledge

One manner of generating or discovering ideas is to bring to surface your knowledge of the topic or/and personal experience. The techniques meant to prompt you to reflect on your experience and bring to surface your knowledge of the topic are**: brainstorming, freewriting, focused freewriting, mapping**.

Since these techniques have already been discussed in **Unit 2**, we shall pass to the other important means of discovering ideas, i.e. **reading critically**.

## 5.2.2.2. Reading Critically

If you have found that reflecting on your experience has generated strong interest, but hardly any ideas on the topic, it is time for you to go to the library in order to seek further information. When reading a text, try to be an active, critical thinker. As such:

1. Be alert to differences / contrasts.
2. Challenge the sources you read by asking questions, such as:
   - What central problem does the text explore?
   - What is the most important / striking statement the author makes?
   - Is the author an authority in this field?
   - How can I use this passage? What can I learn from it?
3. Set issues in a broader context:
   - Identify important issues in the text you are reading**;**
   - Assume that each issue is part of something larger. Try to speculate on this ("What' s this part of?")**;**
4. Form and support opinions.

5.2.3. Devising a Thesis

Once you have generated your ideas, you are ready for the next step−finding a **thesis**. A **thesis** is a single-sentence statement that summarises your controlling idea, the position you support or the point you want to make. At this early stage you are not supposed to write the **final thesis**; what you can do instead, is to write a **working thesis**, a statement that you think will prove accurate.

Like any other sentence, a thesis consists of a **subject** and a **predicate**. The **subject** of your thesis should identify the subject of your essay. The **predicate** represents the claim (assertion) you want to make (see the diagram below):
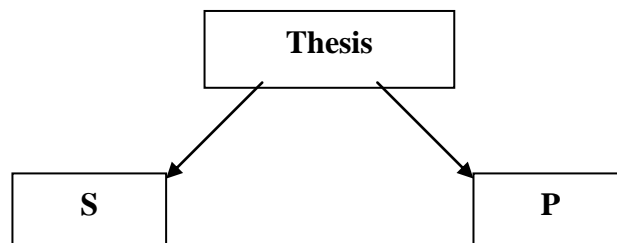
Subject of essay   Verb expressing your claim
                                         (assertion)

If we consider the thesis "*Watching TV has more advantages than disadvantages*", its **subject** is *"watching TV"*, while its predicate "*has more advantages than disadvantages*" will represent the claim (assertion) made by the writer.

Look at these thesis statements. Write their component parts in the table below:

1. All young people should stay at school until the age of 18.

2. 'Cold fusion', if it proves practical, will have tremendous economic and humanitarian value.

3. Chronic fatigue is real, though its causes are not completely understood.

	Subject	**Claim**
1		
2		
3		

Note that a thesis is **not** a simple statement of fact. Facts need not call for an opinion and arguments – investigation can prove whether they are true or false. A thesis statement, on the other hand, calls for your opinion. As shown above it represents your controlling idea and as such it requires you to make a judgement, take a stand, give reasons.

Fact: During the past few years, robotic system have been used on a wide scale in the automobile industry.

Thesis: The wide use of robots in the automobile industry

has more advantages than disadvantages.

The thesis statement should be *limited* and *specific*. You should avoid a thesis that is too broad and vague. One way of doing this is to pose the journalist' s questions: *who? what? when? where? which?*

In response to the essay question, writers may display different levels of commitment. **Commitment** refers here to what the essay writer is willing to do with the material at hand. The American legal scholar Oliver Wendell Holmes made an interesting analogy between intellectual commitment and the number of stories in a building:

> There are one-story intellects, two-story intellects, and three-story intellects with highlights. All fact collectors who have no aim beyond their facts are one-story men. Two-story mere compare, reason, generalize, using the labour of fact collectors as their own. Three-story men idealize, imagine, predict–their best illumination comes from above the skylight.

> (cited in Esther Fusco, 1985:81)

Starting from this analogy, we might say that *one-story* essay writers do little more than present a collection of facts and figures. Readers, on the other hand, want to know how these facts and figures are brought together in a meaningful way. Their expectations are baffled by a writer who makes a one-story commitment, because such a writer makes no attempt to create meaning.

Consider the following topic: *Robots - a Mixed Blessing? Discuss.*

A one-story writer may produce a thesis like this one**:** "Robots are useful for humans."

It is quite obvious that such a thesis does not meet the requirements of the task which asks the writer to make a judgement and take a stand.

A two−story commitment writer will act as a thinker, i.e. s/he will reason with facts and make observations about them or based on them. Such a person will define, order, classify, explain, establish cause and effects in order to *argue* and *inform* the reader.

Someone making a two-story commitment to the essay topic presented above might write a thesis like this: "Although robots may be considered a 'mixed blessing', we must be aware that they are the way forward and we cannot progress without them."

A three-story commitment signals the most ambitious commitment a writer can make. Besides addressing the specific requirements of the topic question, such a writer shows his willingness to take risks by expanding the scope of the paper. This can be done by introducing a *tension* built on opposing elements that are not obvious on a first reading of the topic question.

Try to write a thesis showing a three-story commitment to the essay topic presented above. Before doing this, read the essay question again and identify a tension that may not be apparent at first sight.

5.2.4. Organising Ideas

Once you have found a thesis statement, it is time for you to start planning the body of your essay. In order to do this, go back to the list of ideas you wrote. These can be ideas written while brainstorming the topic or ideas noted down while consulting various books or articles dealing with that specific topic.

In order to organise the ideas you have generated you may follow these steps:
• Evaluate your ideas and eliminate those that are not relevant for:
     - your topic
     - your thesis
     - your purpose
     - your readers
• Place together ideas which are similar in some way;
• Decide on the order in which to present your ideas;
• Create common ground with the readers.

This last step is extremely important for any kind of writing. To communicate an idea, any writer must imagine readers and the information they need to gain full understanding. Therefore, before you begin to write you must consider who your audience is (age, sex, educational background, religious background, ethnic heritage). Your sense of the audience will influence the content, the language and the tone of your piece of writing. That is why we think it necessary to devote a special unit to this aspect.

5.2.5. Devising a Writing Plan

In order to devise a plan or sketch of your essay or paper, you may follow these steps:

- Write your working thesis at the top of a page;
- Identify its significant words and circle them;
- Ask questions of or make comments about each circled element.

By the time you finish 'quizzing' your thesis, you will have identified most of its parts.

In order to quiz your thesis, you might use the journalist's questions: *what? who? which? when? why? how?*

Suggested Questions

What does it mean?
What are some examples?
What is the cause? / Why does it happen?
What is the effect? / Which are the implications?
Which are the key features?
Which are the reasons for/against?
What is my view?
When does/will it happen?
How often does/will it happen?
How to classify types/parts?
How to describe?
Who is involved/ responsible/ affected?

Such questions will lead to comments.

Comments

Define	Discuss	Classify
Describe	Explain	Argue

In a thesis, information is densely packed; when you write a paper based on this thesis, you need to 'unpack' the information, by discussing it. The questions above are meant to help you 'unpack' the information contained in the thesis and obtain a sketch of your paper.

Thesis
Though having a job while still a student has certain benefits, the price you have to pay is high: absenteeism and less time for study.
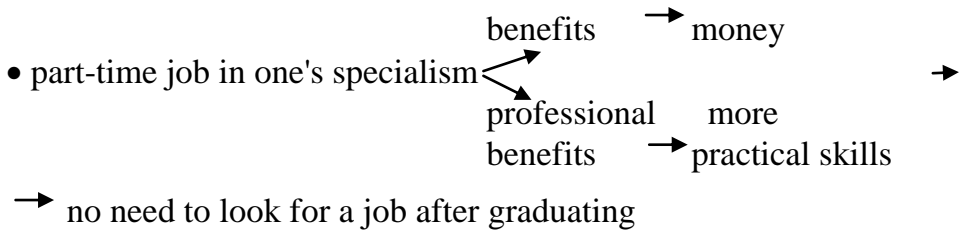
Sketching the Paper
- Classify jobs undergraduate students may have: related/not related to specialism; part-time/full-time
- Give examples of such jobs
- Discuss key benefits of having a job (general + specific to various categories)
- Discuss possible implications
- Discuss disadvantages of having a job while still a student
- Discuss possible implications:
 - sporadic attendance
 - lack of time for study
 - anxiety (tired, nervous)

more pressure → exams not passed →

→ abandoning one's studies

no prospect of promotion

more anxiety

financial   more

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benefits → money

- part-time job in one's specialism <

professional   more
benefits → practical skills

→ no need to look for a job after graduating

Think of your sketch as an **action plan**, meant to set an agenda for the paper which is to be written.

5.3. Summary

In this unit we started dealing with essay writing. The unit focused on pre-writing strategies**:** *analysing the question, discovering and generating ideas, formulating a working thesis, organising ideas*. The main focus was on clarifying an idea and finding a thesis statement. According to the level of intellectual sophistication displayed in a thesis there are three degrees of commitment: *one-story commitment* (the least sophisticated), *two-story commitment* and *three-story commitment* (the highest level).

5.4. Keywords

claim
comment
commitment**;** one-story ~**;** two-story ~**;** three story ~
essay
focus
thesis
topic

5.5. Activities

1. *Below are two sets of theses. Characterise each thesis in each set as having a one- , two-, or three-story commitment. Place the number and letter corresponding to each thesis under the appropriate heading. N.B. You have **two** theses in each column! Explain your choice.*

One-story commitment	Two- story commitment	Three- story commitment

1.a. Wilderness camping poses many challenges.

1.b. Wilderness camping teaches us that we must preserve what is brutal in Nature, even at the expense of our safety.

1.c. Like a mirror, wilderness camping shows you to yourself–for better and worse.

2.a. Educators can use violence on TV to make teenagers confront aggression in themselves and in their environment, thus breaking the cycle of violence in the real world.

2.b. Violence on TV is not good for teenagers.

2.c. Violence on TV affects and changes teenagers.

2. *In response to these statements, write three theses, showing a one- , two-, and three-story commitment:*

• University students should be required to attend all classes. Discuss.

• Now that we have computers, books are not needed anymore, and they will probably disappear.

3. *Choose one of the titles below and write a two-story commitment thesis. Circle the significant words and phrases in your thesis and write comments. Prepare a sketch of your paper from the stated and implicit ideas you have identified.*

1. Will outer space travels be part of our ordinary existence in the 21st century? Discuss.

2. Should the development of technology be stopped because it can harm the environment? Discuss.

3. Will paper-made books disappear now that we have e-books? Discuss and give reasons to support your point of view.

6 CREATING COMMON GROUND

We have seen both in **Unit 2** and in **Unit 5** that *knowledge of audience* is extremely important whenever you communicate (either orally or in written form). Taking into account the strong impact such knowledge may have on your piece of writing (content, language, tone), as well as the fact the importance of such knowledge is sometimes disregarded ("We cannot see our readers, therefore why should we care about them?"), we consider it necessary to devote this chapter to the presentation of various techniques meant to achieve common ground with the reader. But first of all, let us try to answer the question: What **is** common ground?

6.1. Definition

Common ground may be defined as the base of shared knowledge created in a text through carefully selected details, presented paragraph by paragraph.

*Common ground* is created in response to two main questions:

• What details from my own experience and reading can help me fully express my idea?

• What connections can I make to my reader's experience that will help them understand?

Of the interrelated elements in the communication triangle discussed in **Unit 3**, the **reader** or **audience** is of greatest concern in creating common ground. Even in the case of *expressive writing* (e.g. a diary entry) you write for a reader, although that reader might be yourself. In real-life situations, when you write you do that in order to communicate with someone and who that someone is will have a dramatic effect on your piece of writing. In **Unit 2** we argued that a text about virtual reality (VR) systems addressed to professionals would be quite different from a text about VR systems addressed to children. Being aware of your audience's needs, their experience and the limits of their understanding plays a significant role in creating common ground details. **Appendix 1** suggests several sets of questions that will help you define your readers in terms of their experience, expectations and level of understanding. For the essay you write on the TOEFL or for the CPE you can assume that your readers are educated, intelligent members of the general public. In that follows, we shall discuss various techniques meant to create common ground.

6.2. Creating Common Ground: The Process

Once you have formulated a working thesis and you have organised your ideas, you are ready to think about your readers and strategies for creating a base of shared experience and knowledge in each paragraph. The process of creating common ground is shown in the diagram below, adapted from Rosen (1995:43).
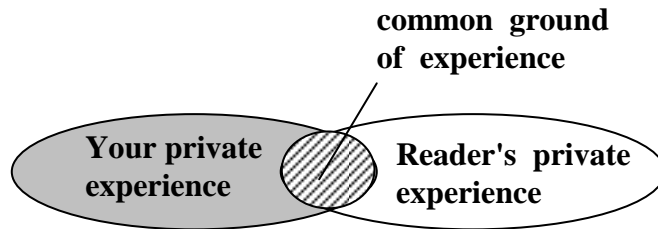
Stage 1: Begin with separate experiences

Your private experience

Reader's private experience
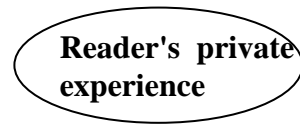
Stage 2: Plan for a base of shared experience and knowledge

Your private experience

Reader's private experience
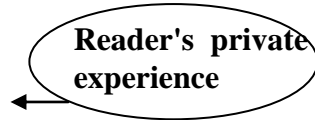
Stage 3: Create common ground by linking separate experiences

common ground of experience

Your private experience

Reader's private experience

As can be seen from the diagram presenting **Stage 1**, before starting to write the first draft, you should be aware that your private experience, beliefs, level of knowledge and understanding may be quite different from those of your reader. Each paragraph in a text is about an idea. Although the readers can have access to these ideas, they can have no access to your private experience or set of values on which these ideas are based.

Therefore, what you need to do is to facilitate the reader's access to the beliefs, attitudes, experience underlying the ideas you put forward in each paragraph. How can this be done? The answer is quite simple: by bringing in **details** through specific facts, examples, summaries of your own or other people's experience with the subject, descriptions or anecdotes. If the readers understand the idea of each paragraph through specific details, then they will be able to follow and respond to that idea. Remember that the details you include should be suited to your topic and audience (see

Appendix 1 for the questions you can pose in order to define your audience).

Once you have found those details, include them in the paragraph you want to write. In **Stage 3**, a common world were readers **can** have access is created through details that bring to the surface your experience and attitude. The shaded overlap area in the diagram represents this common ground.

As you contemplate writing an essay, ask yourself: "What details from my experience and reading will I need in order to develop my idea?"

When you create common ground starting from your experience and reading, several techniques are at hand:

• *narration*
• *quotation*
• *summary*
• *description*

6.3. Techniques for Creating Common Ground
6.3.1. Creating Common Ground Based on Your Experience/ Reading
6.3.1.1. Narration or Anecdote

You can create common ground by telling a story. Not any kind of story, of course, but one which is related to your topic. A story well told is in itself enjoyable. When this story also gives the readers access to the background of your thinking, it creates a base of shared knowledge and experience which will permit the reader to follow and respond to your ideas.

Here is the introductory paragraph of a piece of writing on the measurement explosion. Note the way in which the writer creates common ground with the readers by using an anecdote:

The story – apocryphal, one supposes – goes like this. A Scottish farmer always had prize sheep to take to market, while neighbouring farmer's sheep were constantly puny. When a visitor once asked him his secret, he said: "While they're weighing their sheep, I'm fattening mine." A fundamental tool of engineers and scientists is that of measurement, but is it possible that, like the farmers' neighbours, we sometimes overdo it?

Donald Christiansen

Can you think of other possible topics in which this anecdote might be used to create common ground?

6.3.1.2. Quotation
A well-chosen quotation can create immediate common ground with the audience because it gives both you and your readers exactly the same words on which to reflect.

Look how skilfully Judy Meyers, Thomas Wilson and John Linehard use a quotation from a children's book as a metaphor about the information revolution.

In his recent children's book, *Haroun and the Sea of Stories*, Salman Rushdie offers a vision we can apply to 21st-century communications. At one point, a Water Genie tells Haroun about the Ocean of the Streams of Story:

[It] was made up of a thousand thousand thousand ... currents, each one a different colour, weaving in and out of one another like a liquid tapestry of breathtaking complexity. [Each] coloured strand represented and contained a single tale.

[The ocean held] all the stories that had been told and many that were still in the process of being invented... The ocean of the Streams of Story was in fact the biggest library in the universe. And because the stories were held here in fluid form, they retained the ability to change, to become new versions of themselves, to join up with other stories... so that unlike a library of books, the Ocean of the Streams of Story [was] alive.

Rushdie gives a perfect metaphor for what is happening to us. We already swim in new electronic streams. We e-mail ideas back and forth. The streams in this vast ocean of stories really do ebb and flow in various stages of creation and competition.

Judy Meyers, Thomas Wilson and John Linehard

6.3.1.3. Summary

Summarising a source is another technique used for creating common ground. The role of a summary is identical to that of a quotation − it offers both your readers and yourself the same knowledge base on which you can build your arguments.

In his book, *Dreams of Final Theory*, Steven Weinberg sets his sights beyond a mere description of recent developments in particle theory. His quarry, as implied in the title, is much bigger game: the properties of a hypothetical "final theory" and the potential implications of the discovery of such a theory for modern thought. I realize Weinberg might wince at this description, but his book is as much a philosophical treatise about the direction of knowledge of physical reality as it is a discourse about physics...

By its very nature, physics alone among the sciences offers the possibility of coming as close to understanding *why* as our culture is likely to get. It is only physics, after all, that can tell us, in some fundamental sense, how what there is came to be − and perhaps whether any other route was possible.

Lawrence Krauss

6.3.1.4. Description

Descriptions are meant to let the readers see and feel what *you* have seen or felt *'Seeing'* here has two meanings: a) the literal one − making the reader see the place, person, thing you describe; b) a figurative one − making the reader 'see' or understand (a problem, a puzzle, a condition). Your goal is in both cases to create common ground through which to explore an idea:

The setting is simple**:** a rectangular room with its walls painted black except for one white square and one white triangle. In the centre of the room, a video camera hangs from a shaft connected to an overhead gantry. Below it is a plastic disc connected to a circle of eight, touch-sensitive bumpers. Motors on the gantry begin to hum, the camera is driven forwards, backwards and from side to side as it explores the room like an animated Cyclops. After a few moments to orient itself, it advances steadily towards the triangle and then comes to stop. The experiment has been a success.

<div align="right">Clive Davidson</div>

6.3.2. Creating Common Ground by Appealing to Your Reader's Experiences

The techniques presented so far − narration, quotation, summary, description are, up to a certain extent, *writer-oriented*, in that they make public some aspect of the writer's private experience and invite the audience to join in, to share that experience. To put it shortly, the techniques above invite the reader into the writer's world. The other side of the coin is represented by techniques meant to make the writer come closer to the reader's world or to the shared world of public experience. There are three main techniques of this type**:**

- *referring to the reader's experiences*;
- *referring to public knowledge*;
- *creating an analogy*.

6.3.2.1. Referring to the Reader's Experiences

This technique involves describing a general condition, belief or widespread attitude which you assume is shared a) by everybody, your readers included; b) by certain groups of people, your readers included. Your goal is to involve the readers, to make

them reflect on their own lives while reading the text you have written.

> *Here is a passage that gives advice on how to write a CV in which the author, Robert Gray, creates common ground by making assumptions about the readers, their concerns and experience/lack of experience.*
> *Who is the targeted audience?*
> If you have achieved anything noteworthy at work, or had some responsibility, say so. For instance, if you've ever had a part-time or summer job – let's say waitressing you might be able to include some short statements which make it more impressive. For example, "section manager, in charge of five members of staff" or "responsible for cashing up".

6.3.2.2. Referring to Public Knowledge

Another way of creating common ground is to explore an idea through information that lies outside of *both* your experience and your readers' experience. When using this technique, you assume that the readers **know** about that particular event or piece of information.

The event you base your idea or argument on might be some recent news event or some piece of information that belongs to what might be called 'cultural property', e.g. films, novels, myths. The number of details you include in order to create common ground depends on your sense of the audience.

Notice how the author of the following passage creates common ground through references to public knowledge in order to introduce, explain and explore the topic *Fuzzy Logic.*

If men are mortal and Socrates is a man, then Socrates is mortal. Is that the way people really think? Only if they resemble Mr. Spock, the fictional hero of "Star Track". According to the rules of Vulcan logic (which have a distinctly Aristotelian ring), things are true or false, on or off, one or zero, like the circuits of a computer. Spock, though half-human, could not tolerate fuzzy

thinking. He is a binary decision-maker, a computer dressed in human clothing, given away by ears.

(...) in the real world things are neither true or false but something in between. Is the Statue of Liberty tall?

Laurence Marschall

6.3.2.3. Analogy

An **analogy** is a comparison that provides insight into an idea. According to *Webster's New Collegiate Dictionary* (1980:41), it represents "a resemblance in some particulars between things otherwise unlike." An analogy creates a context in which readers gain access to your idea through information or experience that is familiar to them.

The passage below focuses on several analogies made along the centuries between mental processes and various technological developments:

(...) throughout history metaphors for the brain have been coloured by the biases of contemporary science and technology. The early Greeks, captivated by their own successes in building aqueducts, thought of mental processes in terms of the flow of bodily fluids. In the seventeenth century, when automatons were the rage, the French philosopher René Descartes compared the working brain to the interplay of gears, cogs and cams in a complex machine. In the nineteenth century the emphasis was on the physical connections among brain components, an approach stimulated by the contemporary fascination with railway networks.

Richard Restak

6.4. Tone

Common ground is created not only by means of the details you select (see the techniques presented above), but also through your choice of words. **Tone**, a writer's attitude toward the reader and the subject, is always apparent in the choice of words. When you choose one phrasing over another, you implicitly make a

decision about your tone and project a certain attitude toward your readers and topic.

Tone should be appropriate to your topic and readers. If this happens, *it* will help you create common ground with your audience. You may choose from among a wide variety of tones: formal/informal, humorous, serious, a.s.o., depending on your purpose, topic, sense of audience and text-type. Mismatching tone and topic can hinder or even ruin communication.

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*Read the two passages below. Characterise their **tone**, choosing what is appropriate from the following list:*

serious	gentle	distant	friendly	self-mocking
patronising	light-hearted	formal	neutral	informal

---

1. Thermionic energy conversion is the process of converting heat directly to useful work by the phenomenon of thermionic emission ... Electrons "bail off" from the emitter material surface, a refractory metal such as tungsten, when heated to high temperatures (approximately 2000 K) by a heat source. The electrons then traverse the small interelectrode gap, of the order of micrometers to tenths of a millimetre, to a cooler (approximately 1000 K) collector surface where they "condense" producing an output voltage that drives the current through the electrical load and back to the emitter.

      Mysore L.Ramalingan and Timothy J. Young

2. "Lawyers can do to language what steam tables do to vegetables".

  I was intrigued by the comparison because of a conversation. I had over lunch recently with a former English professor. He had mentioned steam tables, and I responded with the news that the new edition of steam tables contained software. "Software? What are you talking about?" he retorted.

"You know", I replied, "disks with property calculation programs".

"But what does software have to do with my soggi zucchini?" he asked.

   He, of course, was referring to his cafeteria lunch; I had thought he meant the thermodynamic properties of steam.

Charles W. Beardsley

6.5. Summary

   Starting from the assumption that the writer's sense of the audience influences to a great extent the content and the language of any piece of writing, this chapter has been devoted to *techniques for creating common ground*. It started with a definition of *common ground*, understood as a base of shared experience created between writer and reader. Then it presented and analysed two main sets of techniques: those which are related to the writer's experience and reading (*narration* or *anecdote*, *quotation*, *summary* and *description*) and those which appeal to the reader's experience (*referring to the reader's experiences*, *referring to public knowledge*, *creating an analogy*). Last, but not least, the chapter discussed *tone*, the writer's general attitude toward the reader and topic and its importance in achieving successful communication.

6.6. Keywords

analogy   quotation
anecdote   reader's experience
common ground   summary
description   tone
public knowledge   writer's experience

6.7. Activities
1. *Read the texts below. Which techniques for creating common ground do the writers use? Fill in the table with the name of the technique(s) used in each text. Take the strategies for creating*

common ground in this chapter as a guide. If possible, try to also include other strategies (e.g. rhetorical questions, surprising fact/statistics).

1. Remember *The Fly*? In the classic science fiction film an inventor experimenting with teleportation walks into a kind of telephone booth and throws a switch. Somehow his atomic makeup is supposed to be transported electronically to a similar booth across the laboratory, where the atoms are then to be reassembled. But his technique is sloppy, and he fails to notice that a housefly has joined him in the transmission booth. Of course, when the atoms are reassembled across the room, a monster – half-man, half-fly – emerges. Then the fun begins.

The premise of the story is scientifically laughable, but two recent developments in electronic and digital processing have managed to pull off a kindred trick.

2. If you are just about to throw out your granny's old cast iron pots, think again. They could make an important difference to your family's diet. Recent research has shown that we may have become obsessed with overpurifying our food.

3. Rock concerts are more likely to damage your hearing than listening to a personal stereo or going clubbing, warns a French hearing specialist, Christina Meyer Bisch.

Meyer Bisch studied 1364 people between the ages of 14 and 40. They were divided into five groups depending on their listening habits. On average, the concert-goers saw live bands once a month but did not go to clubs or wear personal stereos. Those in the "discotheque" group went to clubs at least once a month but almost never went to live concerts or listened to personal stereos.

The most spectacular effects of loud music were seen among the concertgoers. In this group 44% had symptoms of temporary hearing loss.

4. At a party I attended recently, the hostess proposed an intriguing game. To begin, she taped a name tag to the forehead of each guest − on which she had written not the guest's name but the name of a historical person, place or event. No one was told his or her designation; the object of the game was for the guests to discover their own 'identity' by asking questions of the others.

Later that night I dreamed I was at a similar gathering, except that the guests and the theme of the party were different. All the world's most distinguished brain scientists were there, and taped to their foreheads were the names of parts of brain.

My dream intrigues me for several reasons... all the players in my fantasy, taken together, represent the brain with all its parts. [Then], the parts − the players in the game − are challenged, individually and collectively, to comprehend not only their own role in the functioning brain but also, by extension, the operation of the whole. And that raises a central question: Is such analysis even possible? Can the understanding of one component provide insights into the functioning of the whole?

Text	Common-Ground Technique(s)
1	
2	
3	
4	

2. *For each of the texts above, try to characterise the targeted reader.*
3. *How would you characterise the tone used in each of the texts above?*

4. *The following essay was written by an engineering student. Read it and identify the various techniques by which this student writer achieves common ground. Work through the essay paragraph by*

paragraph, using the techniques discussed in this chapter as a guide.

Robots - a Mixed Blessing?

1.   Robots are now a very important part of our lives. We meet them in almost every field of activity. To benefit of their use, though, we have come a very long and not always easy road. Robots have not always been liked, not everyone salutes them but what we know for a fact is that at this moment, in this world we have created we cannot live without them.

2.   But what makes robots so great? The beauty in using robots is that we, humans, are no longer needed to do the hard work that caused so many accidents when men were the only available source of labour force. They are also much more precise than us and almost indestructible. What can kill us very easily is not a danger for these machines. They do so many things for us and are used in so many fields, such as industry, medicine, research.

3.   However, they also have a negative side. It is not their fault , but they cause unemployment, taking the place of human workers in industry and other fields of activity. These days the demand for jobs is increasing on the labour market and people sometimes blame the use of robotic help for not finding a job or for being fired. In many situations this is true: the owners prefer robots because they are more efficient and, in the long run, cheaper than human personnel. Moreover, robots are machines. Great inventions meant to make our life easier. But as great as they might be, they are machines and have malfunctions that can cause accidents or waste of time and money because the process of production is stopped.

4.   I tried in a few words to bring some arguments for and against the use of robots. I think that they are now part of our

lives and we have to accept them. Why should we accept them? Because these days we can' t exist without them and we can' t progress without them. Robots are our creation, we control them and we should take advantage of them as much as we can.

Paragraph	Techniques used
1	
2	
3	
4	

5. *How successful is this student in helping you to understand his idea? Do you agree with his point of view?*

6. *Characterise the **tone** of each paragraph. Give examples from the text to support you opinion. Is there a significant shift of tone from one paragraph to another?*

7. *Read these two paragraphs taken from the work of one and the same scientist: one is addressed to fellow scientists, the other one is addressed to non-professionals. Which is which?*

1. In personal research on the West Indian land snail *Cerion*, my colleague David Woodruff and I find the same two morphologies again and again... Ribby, white, or solid-coloured, thick and roughly rectangular shells inhabit rocky coasts at the edges of banks where islands drop abruptly into deep seas. Smooth, mottled, thinner and barrel-shaped shells inhabit calmer and lower coasts at the interior edges of banks, where islands cede to miles of shallow water.

2. *Cerion* possesses an ideal shell for biometrical work... It reaches a definitive adult size with a change in direction of coiling and

secretion of a thickened apertural lip; hence, ontogenetic and static variation are not confounded.

8. *Now read again the two paragraphs above and complete each box with the number of the text (1 **or** 2) that displays that characteristic:*

- vocabulary
  - technical words   [ ]
  - less technical words   [ ]
  - precise, even 'dry'   [ ]
  - less specific, even 'artistic [ ]

- explanations and descriptions
  - longer, more detailed   [ ]
  - brief and precise   [ ]

- style
  - objective, impersonal   [ ]
  - personalised   [ ]

7   DRAFTING AND REVISING

As we have seen in **Unit 2**, the stages of writing unfold more or less in this order: preparing to write (pre-writing), drafting, evaluating and revising. But these stages also blend into each other: while writing a first draft, you may pause to revise and refine one part of the text (maybe a sentence or paragraph) or you may discover new ideas, new approaches to the topic and you stop to make lists or outlines. This is because, as already shown, writing is *recursive* (see the model suggested in **2.3.**) and writers usually make loops, move back and forth through various stages before contemplating their finished product.

Your working thesis and your sketch are essential for giving you confidence to start writing the first draft. However, you need to realise that your final text will not be identical to your initial plan, even if it is carefully prepared. Before starting the first draft, remember, therefore, that any plan is *provisional* and subject to change.

7.1. Working with Your Sketch or Plan

Writers can adhere more or less closely with the sketch or plan they have produced, depending on their temperament and purpose. According to this criterion, we can distinguish three main strategies. None of them represents the 'correct way' in the sense that it might produce a better draft than the others.

Strategy	Advantages	Disadvantages
1. Adhering closely to initial plan/sketch	• You feel you are making real progress • It keeps you focused - you will not deviate from the thesis	• It limits your vision • It hinders creativity
2. Adhering loosely to initial plan/sketch	• It gives you the chance to explore and discover new territories • It stimulates your creativity	• Your paragraphs may not be logically connected •You may drift away from your thesis
3. Mixed type	• It gives you more freedom than close adherence and more structure than loose adherence	• It may require more time: review plan → write draft → compare draft with plan → add or delete → look at the next section

The object of the first draft is *to get your ideas down on paper* (or on the computer glass screen), *to explore them* and *to establish the general shape* of your paper.

7.2. Tips for Preparing a First Draft

These tips might help you to work through your first draft:

1A

• Write one section/paragraph of your paper at a time;
• When you have finished, take a break;
• Then write another section ;
• Work in this manner until you have finished the draft.

1B

- Another way is to write one section ;
- Read, evaluate and revise the section you have written;
- Move to another section and write it;
- Continue in this manner until you complete the draft.

2.
- When there is no immediate time pressure, write at least two drafts before getting the final text.

3.
- In you first draft focus on content;
- Do not stop the writing process to check for grammar, spelling or punctuation. If you stop, you will probably forget your ideas.

7.3. Overcoming the Writer's Block

As already shown when discussing the model of the writing process (see **Unit 2**), affective factors play an important part: they may hinder, or, on the contrary, they may stimulate the process. During the pre-writing and drafting stages especially, everybody, even professional writers may be affected by the *writer's block*, caused by anxiety and fear of the blank page or empty computer screen. This means that at some point in the drafting process you may get stuck and, as a result, you avoid writing. Avoidance and anxiety are only natural parts of the writing process and they usually disappear in the later stages. But what can you do if you get stuck while writing your first draft? Here are several problems and their possible solutions. You will notice that they cover aspects linked with the tips presented above.

Problem	Possible Solution
1. You cannot get started Causes - fear of the blank page (or of the empty screen)	1. Prepare yourself mentally to write only **one** section of the paper in a single sitting.

- fear you might not be able to finish this vast amount of writing	
2. You want your writing to be perfect, but you realise it looks messy. Effect - whenever you cannot think of the right word or phrase, you freeze up.	2. Be prepared to accept the idea that you need to write at least two drafts. Since there will be a second draft, the first one may have imperfections.
3. You worry about your grammar, punctuation and spelling.	3. Use dictionaries and grammar books.

7.4. Writing One Section of a Paper

Larger documents (scientific articles/papers, laboratory reports, dissertations) are typically structured in **sections** made up of three, four, five logically connected paragraphs. (the **Introduction** and **Conclusion** are sometimes made up of one single paragraph).

*In some pieces of writing, **sections** can be recognised due to certain typographical features.*
Look at one section of this book and identify its typographical features.

The following sequence of steps will help you to write the sections of your paper.
Match each step below (1-5) with its proper instructions (a-e).

Step	Description
1. Prepare to write.	a. If a section is long, divide it into several parts and write one part at a sitting.
2. Identify sections of the paper.	b. Continue writing, building one section on the next, until you complete your first draft.
3. Write one section (one part of	c. Identify purpose and define your audience; generate and organise ideas; formulate a

a section) at a sitting. 4. Write logically connected paragraphs. 5. Write other sections, one at a time.	working thesis. d. Quiz your thesis. You will find several points which will identify the sections you need to write. e. Each section should have a controlling idea. Relate each paragraph to others in the section: the second paragraph will be related to the first, the third to the second, and so on until you finish writing the section.

1	2	3	4	5

7.5. Identifying Potential Problems in Mid-Draft

In a previous section of this unit we have discussed various problems that may be associated with the so-called *writer's block*. There are some more problems that appear at some point in the drafting process. Such difficulties are usually linked with *translating* or transferring ideas on paper. In case you are affected by the *writer's block* you get stuck, you feel you cannot write anymore. In case you are affected by 'translating' or 'transferring' difficulties, you want to write, you **do** write, but you feel you cannot do it properly. What could be done? Step back from your work and try to find the cause. Therefore, ask first: "Why am I having trouble?" and only then "What could be done?"

Here are some potential obstacles in writing a draft. Can you think of possible solutions?	
Problem	**Suggested solution**
1. You have not gathered enough information for that particular part/section.	1.
2. The point you planned to make no longer	2.

seems relevant or correct, now that you discovered new things about your subject while writing.	
3. You realise something is missing in the structure of your paper and you feel the need to expand a section or write a completely new section.	3.
4. The material presented in a section is not suitable for your audience.	4.
5. You have said everything you need in 1000 words, but the task asks you to write 2000 words.	5.

These obstacles, as well as others, can frustrate your attempts at writing. Therefore be alert, develop 'sensors' to let you know when things are not going well, name your problem and find a solution..

7.6. Revising

When you are not under time pressure you should think of revision as occurring in three stages: **early**, **later** and **final**.

Revision is linked with evaluation and creation. Your first draft gives a document potential: it may be incomplete, imprecise, it may have grammar or spelling mistakes. The second and subsequent drafts make this potential *real*: you revise (you add, alter or delete words, sentences and paragraphs) and through revision you clarify your controlling idea, your thesis both for yourself and for your readers. Good revision does not mean *cosmetic* changes (adding, altering or deleting a word); it mainly refers to *fundamental* changes, meant to help you and your readers *clarify ideas* and discover meaning.

7.7. Techniques for Early Revision

Successful writing means, above all, successful communication, i.e. being able to clearly communicate your ideas to the audience.

By the same token, *unsuccessful writing* results from failure in communicating your ideas in a clear manner.

A key difference between the two is your commitment to the process of revision until your draft expresses your meaning exactly. **Early revision**, therefore, involves the following steps:

• Read your first draft to rediscover your main idea;

• Add, alter or delete sentences or entire paragraphs with the purpose of clarifying your idea.

As already shown in **Unit 2**, in order to evaluate and revise your draft you need to ask several questions.

*Here are some questions that you can ask during **early revision** in order to help you rediscover your main idea. They are numbered (1-3). Below there are some strategies that can help you to answer these questions. Each sequence of strategies corresponds to one question (1, 2 **or** 3). Read the questions and the strategies and write the number corresponding to the suitable question in the boxes provided:*

Questions
1. What is the main idea of my first draft?
2. Does my writing satisfy the purpose/task requirements?
3. Does my writing communicate clearly to my audience?

Strategies
a)
• Reread your draft with your audience clearly in mind;
• If needed, revise your level of language, choice of illustrations, tone and general treatment of topic.

b)
• Underline one sentence in your draft in answer to this question;
• If you cannot find a question, write one;
• If you do not have a title, choose one for your second draft. It will help you to clarify your idea.

c)
• Review the set of instructions for your writing task;
• Restate the purpose;
• Reread your draft to see if you have met this purpose.

Apart from asking questions, also challenge the key elements of your essay: the paper's thesis and the structure.

	Strategy	
Below are presented the two challenges and four strategies. Each challenge has two corresponding strategies. Match each challenge with its corresponding strategies.		
Challenge your thesis		
Challenge your paper's structure		

a) Consider locating your new thesis in some different part of the paper. Are there any advantages to be gained? How would this change the order of presentation?

b) Underline the sentence that you intended to be your thesis in the first draft. Ask: "Is this the thesis I wrote about?" Play a doubtful game and answer "*No*". Look for another possible thesis in your first draft. If you find no other thesis, return to the original one.

c) Consider beginning your paper not with your first paragraph, but with some other paragraph. Will the information be better presented if you perform this change? What other changes will be needed to ensure coherence?

d) Study the sentence that you know to be your thesis and revise it until it is precise and concise. Base all other revisions on this new version of your thesis

7.8. Summary

This unit focused on issues linked with writing the first draft and making early revisions. Several tips were offered that may help you to prepare the first draft and beat the *writer's block*. Remember that anxiety is only a natural part of the writing process and that everybody avoids writing at some point. What is important is to overcome such moments – first of all by having a good writing plan and enough time. Try to write only one section of your paper at a

sitting and be prepared to admit that your first draft will have to be refined both from the point of view of language and content. The last part of the unit was devoted to one of the most important (though) sometimes neglected parts of the writing process: revisions. As such, this unit focused on revisions that occur at an early stage. The other types will be discussed in the next unit.

7.9. Keywords
draft
mid-draft
revision: early ~ ; late ~ ; final ~

7.10. Activities
1. *Read this first draft written by an engineering student.*
Starting from the strategies for early revision presented in this chapter make comments meant to improve the draft presented below. Starting from the text and taking into account the comments you have made, write an improved second draft.

Robots – a Mixed Blessing?

Robots have already been used by humans to improve and to make their life much easier, but I have a question for you**:** Does robotization mean the future or the extinction of the human race? I will look at some arguments for and against it.

Some people consider that robots are a true blessing for their accuracy and their higher productivity. Let's take for example a car factory where all the production line is automatized and it is assisted by robots. In the period when the cars were assembled by human hand, the production was about 50,000 cars per month, but when robots replaced humans the production became about 100,000 per month. Now, in this factory, only a few specialists are working, they assist the robots' activity. Robots are used, too, in science and research activities for their capability to work in dangerous places.

On the other hand, a large number of people consider that robots are too expensive and for those who work in special factories like nuclear plants a risk of a malfunction will be fatal. Some are against robotization because of the social consequences. For example, in a factory where the humans are replaced with robots, those workers will become unemployed and that will affect the social structure of that country.

In conclusion, I think that whenever a decision about robotization is made, those who make these decisions must consider the arguments for and the arguments against it. But the real problem is: can robots replace all the humans?

2. *Using any combination of strategies discussed in this chapter write the first draft of an article entitled* **Technology and Change**. *The final draft of your article will be published in a students' magazine.*

8 LATER REVISIONS

The first revision of a draft is fundamental and far reaching, in that it requires the courage to look deep into your paper with an objective eye and make major changes in order to express your main idea clearly, taking into account your topic, purpose and audience. Later revisions are not so dramatic and they refer to certain principles of organisation: **unity**, **coherence**, **balance** and **development**.

8.1. Revising for Balance

Balance is a principle that requires you to correlate the *weight* (extent of development) of a topic/point you have discussed with the importance of that particular point.

First drafts are usually uneven in the amount of information given to each section. Some sections may be too short and may lack important information. In this case, you need to **expand** that particular section by adding new material. Conversely, some other section paragraph in your draft may be too long as compared to the amount of information it provides. In this case you should condense the respective section/paragraph, i.e. to reduce it. At other times you simply need to **cut**: to delete sentences because they are off the point.

These strategies may help you to balance the paper's sections:

• Read your paper again, to see if your sections are evenly developed.

• Expand discussions that are underdeveloped.

- Condense discussions that are overdeveloped.
- Cut unnecessary material.

8.2. Techniques for Developing Paragraphs

To **develop** a paragraph means to devote its sentences to the discussion of a core idea. Sentences that develop will explain or illustrate and will support ideas with reasons or facts.

In order to determine whether a paragraph that informs or persuades is well developed, ask these questions:

- What is the main point of the paragraph?
- Why should readers accept this core idea? (Read with an objective eye the reasons or information you have provided).
- Why should readers care about the main point of this paragraph?

Paragraphs can be developed through various techniques:

Narration or anecdote – telling stories (see **Unit 6**)

Description – evoking what you have seen and/or felt (see **Unit 6**)

Historical Overview – giving a historical account of events:

During World War II, several types of microwave tubes were developed that made possible modern microwave radar and other communications systems. In 1939, the magnetron was invented in Britain by Henry Boot and John Randall. In the same year, the klystron microwave tube was developed by two Americans, Russell Varian and his brother Sigurd Varian. The travelling-wave tube (TWT) was invented in 1943 by Rudolf Komphner, an Austrian-American.

Thomas L. Floyd

Definition – clarifying a term

Definitions should be *concise* and *precise*. Once a term is defined, it can be clarified through examples or descriptions.

The following paragraph includes several definitions and brief descriptions:

An atom is the smallest particle of an element that retains the characteristics of that element. Each known element has atoms that are different from the atoms of all other elements. That gives each

element a unique atomic structure. According to the classical Bohr model, atoms have a *planetary* type of structure which consists of a central *nucleus* surrounded by orbiting *electrons*. The nucleus consists of positively charged particles called *protons* and uncharged particles called *neutrons*. Electrons are the basic particles of *negative charge*.

<div align="right">Thomas L. Floyd</div>

Example – providing a particular case of a more general point.

Examples *show* readers what you mean and, if the example is vivid and well-chosen, they will have a better chance to remember it.

Examples can appear in the same paragraph with a definition, in order to clarify it:

Many encoders first break the message into a sequence of elementary blocks; next they substitute for each block a representation code, or signal, suitable for input to the channel. Such encoders are called block encoders. For example, telegraph and teletype systems both use block encoders in which the blocks are individual letters. Entire words form the blocks of some commercial cablegram systems.

<div align="right">Edgar N. Gilbert</div>

An example can also be expanded into a whole paragraph, especially when it is used to prove a point, to support an argument:

The handling of legal documents is certainly not the only domain in which a conversion to electronic storage and transmission will change the nature of writing. Even personal correspondence is affected. For example, consider the art of the deft postscript. At the end of a chatty letter home, below the signature, you add, "P.S. I've just heard from Stockholm. Good news..." With an electronic letter, "P.S" is almost certainly an artifice. After all, with a word processor it is no more trouble to add a sentence at the beginning than at the end. Bryan Hayes

Division and Classification – dividing into parts and grouping.

There are two broad classes of VHF visual television transmitter design philosophy. The classical approach modulates the carrier at a moderate power level, amplifies the carrier to rated output power and then filters this high-power carrier to obtain the required vestigial-sideband signal. The more contemporary approach, used by nearly all transmitter manufacturers, employs modulation at a very low power level of an intermediate-frequency (i-f) signal. Earl F. Arbuckle III

Comparison/Contrast – presenting similarities and differences.

To **compare** means to discuss similarities between people, places, objects, events, ideas.

To **contrast** means to discuss differences.

Paragraphs of comparison and contrast are not an end in themselves; you should *do* something with this information: classify, evaluate, interpret.
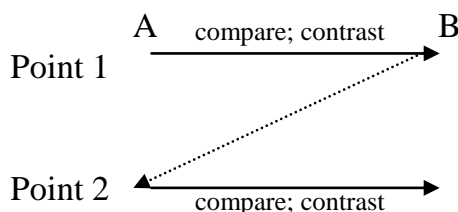
There are two main methods of arrangement in such paragraphs: *by subject* or *point by point*.

The diagrams below exemplify the two kinds of arrangement in case you compare Subject A with Subject B.
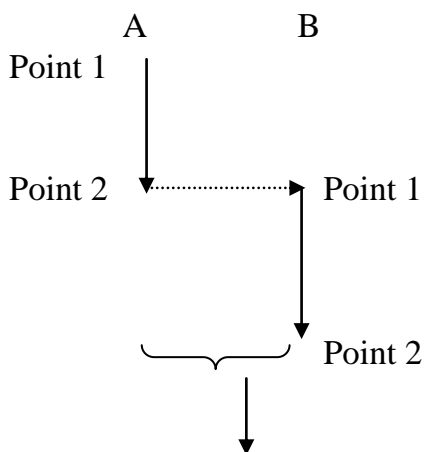
Arrangement by Subject   **Arrangement Point by Point**

compare; contrast

Read this paragraph. Does the writer use arrangement by subject or point-by-point arrangement?

The energy-efficient light bulb uses the principles of fluorescence in a compact bulb which can be fitted into an ordinary lamp base. A normal fluorescent lamp has a long tube, whereas the compact fluorescent bulb is like one glass tube bent over four times with a gap, called a bridge weld, between each fold. Conventional fluorescent lamp cannot be fitted into ordinary light sockets. They require a special fitting called a control gear. In the energy-efficient lamp, on the other hand, the control gear has been replaced by an electronic circuit board which makes the lamp lighter and more compact.

Sequence or Process – presenting an order

Some paragraphs describe processes; such descriptions do not explain cause and effect, they just present carefully sequenced events, through a clear delineation of steps.

Library users returning books place them face down on a conveyor belt. An opto-sensor scans the bar code affixed to the back of the books and transmits the information to the library's computer... When the computer has found everything to be in order, it sends numerical codes to the robot according to the books' subject areas. The robot afterwards picks up the books from the belt and places them in the designated compartments. If there is no compartment for one of the subject areas, the robot looks for the first available compartment it can find and assigns it this subject area using the numerical code.

Roland Hansson

In addition to **balance** and **development**, two other principles are at work: **unity** and **coherence**.

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The principles of **unity** and **coherence** should act at all levels: the whole essay/paper, sections and paragraphs.

The strategies in the table below are meant to help you develop unity and coherence at all levels. Read the three sets of strategies carefully, then label each column, choosing from among these headings: a) Paragraph-level unity and coherence b) Section-level unity and coherence c) Paper-level unity and coherence		
• Quiz your thesis	• Quiz your section thesis	• Quiz your topic sentence
• Generate topics, which become sections of the paper	• Generate topics, which become paragraphs within sections	• Generate topics, which become sentences within paragraphs
• Use topics as a principle of unity – each topic becomes a section	• Use topics as a principle of unity – each topic becomes one or more paragraphs	• Use topics as a principle of unity – each topic becomes one ore more sentences
• Arrange topics (sections) in logical order	• Arrange topics (paragraphs) in logical order	• Arrange topics (sentences) in logical order

8.3. Revising for Unity

Unity is a principle of logic that applies quite symmetrically (as can be seen from the table above) to the whole paper, to sections and to individual paragraphs.

A paper is unified if it discusses only those elements of the subject implied in the thesis statement.

A section is unified if it discusses only those topics implied by the subject thesis.

A paragraph is unified only if it focuses on the paragraph's controlling idea or **topic sentence**.

The **topic sentence** of a paragraph can be placed:

1. **At the beginning of a paragraph**. This position is very common. Place your topic sentence first in a paragraph when you want to inform or persuade the reader in a direct manner.

2. **In the middle of a paragraph**. Choose this location for your topic sentence when you wish to present two sides of an argument. Present one side of an argument. Make sure it leads to your topic sentence. Then starting from the topic sentence, present the other side of the issue.

3. **At the end of a paragraph**. When you write an informative or argumentative paper, you may place your topic sentence at the end. Choose this technique when you support a point of view that you feel might not be shared by your readers. By placing the topic sentence at the end, you have time to build up arguments that will lead the readers, little by little to your core idea.

8.4. Revising to Achieve Paragraph Coherence

A text is considered to be **coherent** when the reader can follow the thread of meaning easily. Coherence is produced by paying attention to the way information is presented to the reader and to the links (transitions) between different parts of the text. As such, it is closely linked to the process of communication, to the transfer of information from sender to receiver. A smooth transfer is the mark of a good text.

In what follows we shall discuss two main aspects of coherence **logical arrangement of sentences** and **cues**.

8.4.1. Arranging Sentences to Achieve Coherence

There are some standard patterns of logical organisation within paragraphs. They fall into three main categories: **arrangement by space, by time** and **by importance**.

Arrangement by Space

This type of arrangement is suitable for *stative descriptions* (see **Unit 2**). In such types of writing you can help readers see or *visualise* what you are describing by arranging a paragraph spatially. Your description could move from front to back, right to left, top to bottom, inside to outside.

Arrangement by Time

You can also arrange a paragraph according to a sequence of events. Start with one event and move *forward* (chronological order) or *backward* (reverse chronology). This arrangement is specific to narrative types of writing.

Arrangement by Importance

This kind of arrangement is *conceptual*, i.e. it has to do with the logical arrangement of the paragraph's component parts. Such arrangement is highly determined by the position of the topic sentence. There are two main patterns:

• **From general to specific: Topic sentence situated at the beginning of the paragraph.** This technique of arranging paragraphs is the most common and consists in starting with the topic sentence. You then move to specific details and arguments.

• **From specific to general: Topic sentence situated at the end of the paragraph**. This is the reverse of the standard procedure: you move from specific, supporting details to a general, concluding statement. This technique is suitable when you write about a debatable topic and you want to build one argument on the next in a secure manner so that the final, concluding sentence might be accepted by the reader as inevitable.

8.4.2. Achieving Coherence with Cues

When sentences are arranged in a certain pattern, you need to *highlight* or *signal* this arrangement through certain devices, so that the reader may move easily through a paragraph. In what follows, we shall briefly discuss four main types of cues: **reference words**, **repetition**, **parallel structures** and **transitions**.

8.4.2.1. **Reference Words**

The most obvious way of signalling the readers that you continue to discuss the same topic is to repeat the most important noun, or the subject of your topic sentence. To prevent this boring and annoying repetition, writers use **reference words**. These are *grammatical words* that take their meaning from some other item in the text.

Reference words can be:

- **pronouns**: *s/he, it, they*
- **demonstratives**: *this/that*
- **possessives**: *my, his*
- **adverbs**: *here, there*

Most reference words point *backwards* in a text:

The Sussex group did not, of course, start right at the beginning with the electronic equivalent of the primordial slime. *The*y began with a species of robot which can move and see in a rudimentary way.

<div align="right">Clive Davidson</div>

There are, however, instances in which such words point *forwards*. If you look at the beginning of the preceding unit, you will find the following example:

"...the stages of writing unfold more or less in *this order: preparing to write (pre-writing), drafting, evaluating and revising*."

8.4.2.2. Repetition

Unintentional repetition makes sentences look awkward. **Planned repetition**, on the other hand, contributes significantly to a paragraph's coherence. The technique consists in repeating identically or in finding a substitute phrase to repeat an important word (important words) in a certain paragraph.

The electronics revolution is rapidly replacing the kind of printed literature in which we search for answers—handbooks, indexes and journals. The book is another matter. Books are a superb technology for telling extended stories and making

overarching statements. Even when books find some kind of electronic expression, printed books will remain a part of our lives.

Judy E.Myers, Thomas C.Wilson, John H.Linehard

8.4.2.3. Parallelism

Parallelism refers to the use of grammatically equivalent words, phrases and sentences to achieve both coherence and balance. A sentence or phrase whose structure parallels that of an earlier sentence or phrase has an echo-like effect and achieves balance both in form and content.

The Heard Island test was a feasibility study, not a climatic experiment. It proved that the deep sound channel can transmit sound over long distances, but it said nothing about whether we could detect greenhouse warming... The greenhouse warming will not be uniform over the world's oceans. It will vary in time and space, as will temperature changes caused by climatic variability...

Walter Munk

8.4.2.4. Transitions

Transitions are words and phrases that establish logical relationships between *sentences*, between *paragraphs*, and between whole *sections* of your text. A transition either directly summarises the content of a preceding sentence/paragraph or implies that summary. Having established such a link, transitions move to a new sentence/paragraph, anticipating what is to come. When you read the phrase *on the other hand*, you know that what you are about to read will contrast with what you have just read.

Transitional devices can be placed *within* or *between* paragraphs. **Appendix 2** presents a list of the most common transitions and the logical relationships they indicate.

Although these four techniques have been discussed separately, (for pedagogical reasons), they are frequently combined to establish coherence in a paragraph. A well-balanced, skilful mix

of *reference words*, *repetitions*, *transitions* and *parallel structures* will act as signposts, leading your reader smoothly through your text.

> *Read the following paragraph on the Lake District and mark all the cues used to establish paragraph coherence.*
> The Lake District is an ideal place for recreation, providing opportunities for walking and climbing and all manner of watersports. In addition, it offers quieter enjoyment for people who want to observe the variety of wildlife there – birds, animals, plants. The link with arts is preserved, not only among the artists who live there, but also in the many arts and craft centres within the region, which are open for visitors to enjoy.

8.5. Determining Paragraph Length

Theoretically, the length of a paragraph you write should not matter as long as the main idea is clear, all sentences are unified and the paragraph is coherent.

Practically, however, the length of a paragraph matters (sometimes a lot) from the reader's point of view. Therefore, during the later stages of revision try to look at your paragraphs with an objective eye. Does the length of your paragraphs invite the reader into your writing? You may recall your own perception as a reader when confronted with very short or very long paragraphs.

> *Recall your own experience. Read these statements and try to fill in the blanks with the words in the boxes:*
>
> a. Your writing is dense   b. your ideas are not well developed
>   c. your ideas are not well differentiated

1	Consistently short paragraphs may send the signal that _____
2	Consistently long paragraphs may give the impression that _____ and that 3_____.

8.6. Final Revision. Editing

Editing represents revision performed at sentence level: spelling, grammar, punctuation, word choice. Editing, just like revising, may take place throughout the writing process, from the first draft through to the last. However, it is usually better to make editing a separate stage, for the following reasons:

• If you stop writing your draft in order to edit, you can easily forget your idea.

• The very sentence you stop to correct may not appear at all in your final draft (you may decide to delete it as some point).

Therefore, while you are writing your first draft, whenever you come across a troublesome area, mark it in your text (underline it, put it in brackets, use an asterisk) and keep writing. This way, you can go back to those problems and pay due attention to them after you have completed the essay. However, if you have problems with the wording of an important sentence, take the time to edit it and get it right. So, be flexible and use your judgement.

As already shown in **Unit 2**, there are four main types of editing you should pay attention to:

• editing for standard language conventions (tone, consistency);

• editing for clear meaning (unusual word, missing context);

• editing for reading understanding (wrong words, ambiguities);

• editing for accuracy or proof-reading (grammar, spelling, punctuation).

8.7. Deciding When a Final Draft is Final

"Now does my project gather to a head". These words, uttered by Prospero, the main character in Shakespeare's *The Tempest*, may well serve as a motto for someone approaching the final stage of revision and editing. But when does this happen? Although stylistically, at least, you could edit your paper *ad infinitum*, at some point you have to stop and echo Prospero's words. This point comes when changes seem not to improve your product, i.e. when you feel that your paper has met the following standards:

• The paper as a clearly main point or thesis to communicate.

• It has achieved unity and coherence at all levels: paper, sections, paragraphs.

• It is free of errors and correctly punctuated.

8.8. Summary

This unit dealt with revisions which usually occur at a later stage in the writing process: *revising for unity, balance*, *development* and *coherence*. Such revisions refine your piece of writing at all levels: whole text, sections and paragraphs. When such revisions are over, take time to *edit* your text for accuracy − check the punctuation, grammar and spelling.

8.9. Keywords

balance	parallelism
coherence	process
comparison/contrast	reference words
definition	repetition
development	transitions
division and classification	unity
example	

8.10. Activities

1. *Read the three paragraphs below taken from an article entitled* **Virtually Real, Really Sick**. *Locate the topic sentence in each paragraph. Underline it.*

REMEMBER *Lawnmower Man*, the tacky Hollywood movie that tried to transport its audience into some psycho-filled virtual future? Or the hype a couple of years ago when Sega and Nintendo claimed to be on the verge of bringing virtual reality to the home? Not much has happened since. Go down to one of the large arcades, and you can don a headset and whiz around a simulated motorcycle racing track, but that's about it. We are still a long way from the promised world of VR set in every home.

Things might be different if quality VR was available at an affordable price. Any system costing less than six figures lacks the picture quality and speed needed to make it anywhere near realistic. But perhaps this slow progress is all to the good because there is another problem, too, and that won't be fixed simply by waiting for the cost of computing power to fall. What is beginning to worry the VR industry is the effect on living, kicking human beings when they are immersed for any length of time in an artificial electronically generated environment.

That existing VR systems can have ill effects on their users is not in doubt. But how serious are they? Claimed problems range from temporary nausea to permanent damage to a VR user's vision. Also in question is what, if anything, can be done to avoid these hazards.

Jane Seymour

2. *Read the following paragraph. Identify the techniques used to establish coherence. Complete the following table:*

As well as allowing image data to be compressed without unacceptable loss of quality, wavelets are very good at improving the quality of existing images.

This is particularly useful in medical imaging. Hospitals now employ several different kinds of scanner which assemble two-

dimensional cross sections of the human body. The techniques, which include computerised tomography (CT), positron emission tomography (PET) and Magnetic Resonance Imaging (MRI), all need to collect large amounts of data before they can build up a good enough image to provide a meaningful diagnosis. But the smaller the amount of data that the doctors can get away with, the larger the number of patients who can be examined with a single piece of expensive equipment. And in CT, where each projection requires an X-ray exposure, the individual patient benefits by not being exposed to unnecessary radiation.

Ian Stewart

Reference Words	Repetition	Parallel Structure	Transitions

3. *In **Unit 7** you were asked to write the first draft of an article entitled **Technology and Change**. Revise your draft for balance, development, unity and coherence at all levels, using the techniques presented in this unit. Correct any possible spelling, punctuation or grammar mistakes. Give your paper to your partner to read it and mark any possible problems. Revise your paper again until you are completely satisfied with it.*

9 WRITING AN ESSAY (II)

This unit deals with a special type of essay, **the argumentative essay**. It presents, discusses and analyses the main parts of an argument and then moves on to a presentation of the general structure of an argumentative essay.

9.1. Argument: Definition and Structure

An **argumentative essay** presents your views on a debatable topic, e.g.:

• All faculties should have an entrance examination. Discuss.

• Should university students be required to attend all classes? Discuss.

• It is never too late to attend a college on a university. Discuss.

Debatable topics are centred round controversial issues. While discussing such issues, people can bring arguments for and/or arguments against. Many topics in the TOEFL writing section require you to discuss both sides of an issue, state your own opinion and support it with reasons.

An **argument** is an attempt to make the reader adhere to **your** point of view through reasoned discussion.

Any argument, be it brief or long, consists of three parts:

• **Claim**

• **Support**

• **Reasoning**

9.2. The Claim

The **claim** expresses your view on the subject. As shown in **5.2.3.**, the *thesis*, the single sentence statement that summarises your controlling idea, is made up of two parts: a *subject* (the subject of your essay) and a *predicate* (a verb that expresses the claim (assertion) you want to make. Therefore, the predicate of your thesis

will represent your claim. Your goal will be to defend your claim as being true, probable or desirable.

If you write an argumentative essay, pay due attention to these three aspects:

• define terms in your claim;
• support your claim;
• provide reasons for your claim.

In order to provide the basis for a solid argument, you should make sure that all the words in your claim are understood by the intended audience. Therefore, examine your claim and, if need be, write a paragraph or a sentence of definition in your essay.

9.3. Defining Terms in Your Claim

Examine these theses. Are there any terms that need to be defined?
1. Although robots may be considered a 'mixed blessing', we must be aware that they are the way forward and we cannot progress without them.
2. Idealism and romance tend to disappear from our lives.
3. Intelligent life does not exist on other planets.
4. Status is more important than money.

9.4. Supporting the Claim

Your claim can be supported in three main ways, by offering

• facts
• opinions
• examples
• A **fact** is a statement that can be verified, can be proven true or false. If you give facts in order to support your claim, then you should be able to verify facts on demand. You can do that by referring to an authoritative source (you can present 'facts' or research findings accepted by experts). Since facts are constantly being updated and revised (especially in the field of science and

technology) as a consequence of research, it is essential that you refer to the most recent sources possible.

• An **opinion** is a statement of interpretation and judgement.

Since opinions are in themselves arguments, they should be based on evidence in order to be convincing. Opinions are not true or false in the sense facts are. They can be more or less supported. To support **your** own opinions, you can refer to the opinions of experts who agree with you.

• An **example** is a particular instance of a generalisation. If you make a generalisation, you need to give examples to demonstrate that your generalisation is correct.

9.5. Providing Reasons for Your Claim

Reasoning represents the pattern of thinking used to connect supporting statements to a claim. Reasons determine the reader to accept support for the claim on three possible grounds:

• **logic**
• **emotion**
• **authority**

9.5.1. Appealing to Logic

An appeal to reason or logic represents the most common basis for arguing in the academic world. There are several types of appeals to logic:

• argument from generalisation
• argument from causation
• argument from sign
• argument from analogy
• argument from parallel case

9.5.1.1. Argument from Generalisation

Given some representative examples of a group, you can infer a **generalisation** – a statement that is true for other examples

of that group. Arguments from generalisation are used to support claims of facts and value.

Illustration

Nuclear power saves lives.

Accident figures and forecasts for all major energy sources worldwide, prove that nuclear is safer – as well as the cleaner option.

More than 10,000 people have been killed in more than 150 accidents in the coal, gas and oil industries worldwide over the last 20 years.

Only 31 deaths – so far – have been directly attributable to nuclear's only fatal accident.

Pollution can kill: fossil fuels release carcinogens, as well as oxides of sulphur and nitrogen. The estimated death risk from pollution from fossil-fuelled power stations is one in a million per year for people living in the polluted area.

Only one in three million people are calculated to be at similar risk from radiation by living near a nuclear installation.

Claim: Nuclear power saves lives.
Support: Facts and figures show that fewer people have died from nuclear power than from other sources of energy.
Reasoning: Generalisation. Figures presented could be generalised to show that nuclear power plants are cleaner and safer than fossil-fuelled power stations.

9.5.1.2. Argument from Causation

An **argument from causation** enables you to claim that an action caused by a person or state of affairs leads to a specific result or effect, e.g. smoking causes lung cancer, live rock concerts cause hearing problems. Conversely, you can begin with the effect, e.g. school absenteeism, car accidents. Then you start asking: "What causes this?" If you work in research, you can even perform an experiment. You will probably find out that a direct causal link is

difficult to establish, because multiple variables (causes) lead to a certain condition (effect). Therefore, be sensitive to complexity.

Illustration:

Most scientists agree that the Greenhouse Effect will add between 1,5° - 4° to the Earth's temperature by 2030. This will change the weather everywhere. For example, the ice at the North and South Pole will start to melt. And when that happens, the level of the sea will rise. If it rises one metre by 2030 there will be serious floods in many countries: 18 million people will lose their homes in Bangladesh and 8 million in Egypt. A rise in sea level will have other effects, too. Holland, for example, already spends more on seawalls (as a%) than America spends on military defence. Experts think that in 50 years, the Greenhouse Effect will cost 3% of every country's money each year. Then there's the problem of food. When the climate changes there will be less food in the world.

Claim: the Greenhouse Effect will cause real disasters.
Support: climatic changes will have many negative effects.
Reasoning: cause and effect: the Greenhouse Effect will make the climate get hotter; as a result a) the level of the sea will rise, there will be many floods, people will lose their homes and b) there will be less food.

9.5.1.3. Argument from Sign

In an **argument from sign**, two things are correlated, i.e. they tend to occur in the presence of one another. If you see one thing, you tend to see the other, e.g. a sore throat is a sign of flu, yawning is a sign that you are tired. A sign is not a *cause*, however. It is an *indicator* you can use to support a claim that answers a question of fact.

Illustration

In Oriental art, the hand frequently assumes a major role; in the West, it is the eye. Indian and Nepalese ceremonial sculpture stresses multiple arms culminating in ritualistic hands. Each slight variation of position and gesture carries a message. The open eye of the West is lost in the circuitous innuendos that make Eastern art one of the most refined experiences in history. Here lids are lowered partially or completely, and the eye looks inward, for in the Orient salvation results from non-involvement with the outside world. Men meditate, they shroud their eyes in silent secrecy, or lift them toward superhuman heights. The Pantocrator of the West looks out on us with wide eyes, but Buddha closes his and directs them toward inner contemplation. The Oriental looks for universal truths, we for immediate ones.

<div align="right">Katharine Kuh</div>

Claim: In Western art the image of the eye is associated with the outside world, while in Eastern art it is associated with the inner world.

Support: Examples – the open eye of Western art and the half-closed eye in Eastern art have profound psychological, philosophical and religious associations.

Reasoning: Sign. The open eye is a sign of involvement, openness to the outside world, while the half-closed or closed eye is a sign of meditation and non-involvement.

9.5.1.4. Argument from Analogy

An **argument from analogy** sets up a comparison between your topic and another topic. Analogies, as already shown in **Unit 6**, relate two things which are otherwise unlike. Although suggestive, an analogy proves in fact nothing and at some point it will break down. So, to use an analogy, think of analogies in terms of spices that are added to your food: an analogy spices your argument and adds some 'flavour' to it.

Illustration

Once upon a time there was an island called ST (Science and Technology), not far from a prosperous continent, ELT. The inhabitants of the island had heard that ELT was famous for its 'cuisine', so they invited several experienced cooks from the continent. The cooks arrived and started opening their restaurants on the island (Gram-Mar, Rea-Ding-à-Loud). But the natives soon become dissatisfied with the menu, saying: "If you eat in one of these restaurants, you know them all". Consequently, they asked for a specific menu, based solely on vegetables that grew on the island. Soon, the restaurants changed their menus: software soup, modem pudding, microchip tart. Long lists of dishes were added, so that some clients found it very difficult (and sometimes boring) to read them.

I was one of the 'cooks' who, like Defoe's Robinson Crusoe, lived isolated on my island. This was not so long ago, but it looks like ages. The same thing happened again and again: we 'offered' and sometimes imposed our menu to the students: non-authentic, extremely specialised ESP texts, grammar, narrow-range vocabulary, translation. Most of the 'clients' didn't like such dishes; still, they were convinced they had to 'swallow' long lists of words or grammar rules, like some kind of medicine, be it sweet or bitter, pleasant or unpleasant.

Formulate the claim, support and reasoning for the text above.

9.5.1.5. Argument from Parallel Case

An analogy creates a correspondence between two apparently unrelated entities: an **argument from parallel case**, on the other hand, argues a relationship between directly related people, objects, events, conditions. Lawyers argue from parallel case when they cite a prior case which is similar in its essential points with the current case. This judicial ruling that serves as a basis for a subsequent case is called precedent. An argument from parallel case requires that situations or things presented be alike in essential ways.

Here is an example of faulty reasoning based on parallel case that persisted until recently in the scientific world:

(...) Observation quickly gave rise to speculation**:** because Venus is the planet nearest the earth, because it clearly possesses a thick atmosphere, astronomers concluded that Venus was the earth's planetary twin. Scientific and popular accounts of Venus began to picture it as a verdant, rainy swamp of a planet, complete with tree ferns and jungle creatures. In his 1888 book *Astronomy with an Opera-Glass*, the American astronomer Garrett P. Serviss marvelled at "this splendid planet" whose "atmosphere... may furnish the breath of life to millions of intelligent creatures, and vibrate with the music of tongues speaking languages as expressive as those of the earth."

<div align="right">David Harry Grinspoon</div>

> *Formulate a claim for the text above. Does this claim belong to the writer or to someone else? What kind of support is offered? Express the reasoning that links the support to the claim.*

9.5.2. Appealing to Authority
There are two main types of authority you can appeal to:
• **your own authority**. In order to do that, establish a bond between you and the readers and make them *trust* your opinion. How can you do that?
- be honest
- choose an appropriate tone
- select appropriate level of language
• **refer to experts** by quoting authoritative sources. One of your challenges will be to evaluate the worthiness of your sources and to quote only *expert* opinion. Another one will be to identify the points in your discussion when such sources may best serve you.

9.5.3. Appealing to Emotion

If appeals to reason are based on logical argumentation and appeals to authority are based on the reader's respect for expert opinion, the last category of appeals – *appeals to emotion* is meant to tap the audience's needs and values. Such appeals can reach more quickly the readers' heart, and may urge them to take action, if need be.

If you want to make an emotional appeal, these steps might help you:

• List the needs of your audience with respect to your subject: physical, psychological, humanitarian, environmental or financial needs.

• Select the category of needs suitable for your audience.

• Identify emotional appeals that you think might be persuasive.

• Place the issue you are arguing '*in your reader's lap'*. Make the reader respond to the issue emotionally.

• Call on the reader to agree on a certain course of action.

What kind of emotional appeals are used in the text below?

Unless there is a major cutback in greenhouse emissions, the earth is heading for a rise in average temperatures unprecedented in human history.

Underneath all the confusion about what to do on a practical level, there is quite definitely a widespread feeling of concern among British people. Recently carried out surveys show that a huge majority feels ecological problems are much more serious than most of us realise and that urgent action is required. Instinctively, people are connecting their lot with that of the earth. After all, if the world can't support life, then the colour of your laundry becomes irrelevant. Yet, Britain could so easily lead by example. We've got the technology. The Second World War also proved that we have the courage and co-operative spirit to rally round a common purpose. That spirit needs to be rekindled. Furthermore, many people suspect that building a sustainable future for our children may be a lot more satisfying than plugging in to today's make-money-at-all-costs society. Then, when our grandchildren turn round and ask, "what did you do in the ecological crisis?", we can reply, "We did our best.". Deep down inside, we are all aware that for them only our best will be good enough.

Sara Parkin

9.6. Writing an Argumentative Essay: Patterns of Organisation

Although there is no set structure for essays on a debatable topic, they generally include the following parts:

1. **Introduction**	• introduce topic
	• establish its importance
	• give background information

2. **Stating how the essay is organised**	• tell the reader how the essay is organised
3. **Developing arguments for**	• develop your arguments by making logical and emotional appeals or by appealing to authority. **N.B.**: logical appeals **should not** be missing from your paper. • support your claim with facts, opinions and examples
4. **Presenting counterarguments**	• present counterarguments and treat them with respect • rebut counterarguments or acknowledge some validity and modify your claim accordingly
5. **Conclusion**	• summarise the main points of your argument • remind readers of what you want them to believe or do

This structure should be seen as a guide, not as a straightforward jacket. Other arrangements are also possible.

9.6.1. Positioning Claim

Your claim can be positioned in different parts of your essay. **Initial position**. You can place your claim at the beginning and then move to support − particular facts, opinion and examples. This pattern is called *deductive arrangement*. It is specific for domains such as: humanities, law, politics. The writer starts with a general principle or claim the truth of which is proven in the body of the essay.

Final position. Your claim can also be placed towards the end. You start with support – particular facts, opinion and examples and move to a claim. This pattern is called *inductive arrangement*. It is specific for scientific and technological argument. The writer starts with facts, data, observations, experiments, finds certain patterns and then makes a claim.

Mid position. You can start with support – facts, opinion and examples. The line of your argument will lead the reader **to** your claim, situated somewhere in the middle of your essay; then you move **away from** your claim, presenting counterarguments.

Positioning your claim is a decision about strategy. The information you present and develop will remain the same. If you are not sure where to place your claim, think of your audience:

> *Before going on, try to answer these questions:*
> 1. Where would you place the claim with a supportive audience?
> 2. Where would you place the claim with an audience that is likely to disagree?

If your audience is likely to be supportive or neutral, you can place your claim at the beginning. If, on the contrary, your audience is likely to disagree, it is better to move your claim towards the end; in this way, you give yourself space (and time) to build consensus with that audience by developing your ideas step by step, until you reach the final part of your essay – the conclusion.

The **reasons** in support of your claim can be presented in order of importance, in the same way you can present your ideas within paragraphs. Thus, since readers tend to remember very clearly what they read last, you can start with *the least emphatic* and move gradually towards *the most emphatic*. Conversely, you can start with *the strongest reason* to make sure you will gain the reader's agreement and then move to *less emphatic reasons.*

We shall now move on to a brief presentation of the various sections of an argumentative essay.

9.6.2. The Introduction

An introduction can be the last part you write. This is because it is easier to write an introduction once you know what you are introducing.

The introduction is a very important part of your paper. It has two main purposes:
• to establish a frame of reference
• to attract the reader's attention

9.6.2.1. The Introduction as a Frame of Reference

An introduction establishes a frame of reference for the readers that makes them anticipate and evaluate what they will read:
• field (domain) discussed
• topic focused on
• perspective from which that topic is discussed
• type of language, evidence and logic that will be used.

Readers will quickly know from your introduction if you are a reporter, an essayist, a student, a laboratory researcher, or a theorist.

9.6.2.2. The Introduction as an Incentive

Beside establishing a frame of reference and setting expectations about language, tone, content, evidence, type of reasoning, an introduction should also catch your readers' attention and make them continue reading. This is what differentiates an *effective* introduction from a *complete* introduction. The latter type provides all the background information necessary to understand the paper. A particularly *effective* introduction catches the readers' attention and makes them follow the writer's argumentation with interest and attention.

9.6.2.3. Strategies for Writing Introductions
1.
• Introduce your topic, using vocabulary appropriate to the perspective from which you will be writing.
• Establish a set of expectations about language, evidence and logic.

2.
• If readers lack the background (context) necessary to understand your paper, provide that background.
• Develop a strategy meant to orient readers to your subject and to stimulate their interest:
       - define terms
       - present a brief history
       - review a controversy

3.
• If readers are likely to know this subject, devote more time and space to stimulating their interest. Develop a strategy that will gain the reader's attention:
• raise a question
• quote a well-known source
• refer to public knowledge
• tell a story
• start with your thesis.

4. Once you have provided background information and stimulated the readers' interest, turn the readers attention to your thesis or argument.

> *Taking into account the previous discussion, which of these texts is the best opening paragraph? Why?*
> 1. The use of robots in so many fields of work has greatly increased in the past 40 years. Robots were used earlier, but not in so many fields and they did not have so much accuracy and precision.
> 2. The use of robots in industry is a blessing for some people and a curse for others.
> 3. The progress of technology in the late 20th century has led to the development of some complex machines designed to help and even replace humans in complex or dangerous jobs.
> 4. Robots are now a very important part of our lives. We meet them in almost every field of activity. To benefit of their use, though, we have come a very long and not always easy road. Robots have not always been liked, but what we know for a fact is that at this moment, in this world we have created we cannot live without them.

9.6.3. Stating how the Essay is Organised

If the essay is short, you can use only one or two sentences to signal the readers how the essay is organised.

e.g. **This essay will deal with** arguments for and against large scale robotisation. First **I'm going to look at** some arguments in its favour.

Phrases that may be used at this point are:

In this essay	I intend to	- look at
	I'm going to	- deal with
	I shall / will	- focus on
		- examine
		- discuss

9.6.4. Presenting Arguments for/against

There are two main strategies of organisation:

1. Start with the side you support → move on to the side you do not support.

2. Conversely, consider the side you do not support first → move on to the side you support.

No matter which way you start, do not forget to defend you claim with *facts, opinion, examples*.

A good way to construct these sections is to start with an *introductory sentence*, then move to the presentation of each point, using *sequencing words*, such as: *first(ly), second(ly), next, last(ly)*. For these sections you could use the following structure:

Introductory sentence
(There are *n* main arguments for/against ...)
Point 1
(Firstly...)
Point 2
(The second point/argument/counterargument...)
Point n
(The last point/argument/counterargument...)
(Finally ...)

> *Read this paragraph taken from an essay written by a student. Find the introductory sentence and main points:*
>
> I think there are three main points in support of robotisation. First of all, robotisation means high productivity: by using robots, managers can achieve all production goals, i.e. both quantity and quality. Secondly, they can work all day long: they do not eat or drink, they never get tired or bored, and, what's more, they do not ask for salaries. Lastly, by using robots, accuracy and precision will increase. Think of the assembly of electronic parts–installing chips in printed circuit boards requires great accuracy, a quality that robots possess to a much higher extent than humans.

9.6.5. The Conclusion

The conclusion is the final point of contact between writer and reader. Just like the introduction, it is a very important part of your paper. A conclusion is that part that brings threads together. It has three main purposes:

• to signal to the reader that you have finished making your point;
• to summarise your ideas;
• to explain to readers why your ideas are significant.

Not all writers take into account all these purposes when writing a conclusion. Minimally, the conclusion will include a *summary of the main points.* A more ambitious conclusion will go beyond a summary and will try to answer an inherent question posed by readers: "So what? Why does this paper matter to me?" You can do that by calling for an involvement on the readers' part, by giving them **food for thought** or by making a **call for action**.

Giving the readers food for thought. You can:
• ask the reader to address a puzzling or troubling question
• ask the reader to speculate on the future

• ask the reader to reflect on the past

Call for action. You can ask readers to take a stand and **do** something in order to solve a certain problem.

You can also use a combination of these techniques or find others, taking into account your topic, purpose and audience.

Conclusions can be signalled by various phrases, such as: *in conclusion, in summary, to sum up, in brief, in short, as shown above.*

Here are some concluding paragraphs written by students in response to the question **Robots − a Mixed Blessing?** *Decide which is/are more effective. Why?*

1. In conclusion, we can say that robots are a blessing, because of the advantages of using them. But robots can also be seen as a curse, because I think that in time they will totally replace humans in any activity.

2. In conclusion, robots should be used in all kinds of domains because with them we can create a new, advanced technology. They make our life easier. They are indeed a 'mixed blessing', but we must be aware that they represent progress. They are the future.

3. In conclusion, I think that whenever a decision about robotisation is made, those who take such decisions should consider the arguments for and the arguments against it. But the real problem is another one: Can robots totally replace humans?

4. I tried in a few words to bring some arguments for and against the use of robots. I think that they are now part of our lives and we have to accept them. Why should we accept them? Because these days we can't exist without them and we can't progress without them. Robots are our creation, we control them and we should take advantage of them as much as we can.

9.7. Summary

Since many TOEFL essays are of the argumentative type, we thought it necessary to devote a whole unit to this type of essay. The

former part of the unit dealt with the three constituent parts of an argument: *claim, support* and *reasoning*. Each of these elements was defined and analysed. We paid special attention to the three types of reasoning (*appeals to logic, authority* and *emotion*), because it is through a certain kind of reasoning that readers can be determined to accept support for your claim. The latter half of the unit suggested a workable model of organisation for an argumentative essay. You should see it as a flexible framework within which the position of various parts may slightly differ, depending on your purpose and audience.

9.8. Keywords
appeal / ~ to authority ; /~ to emotion ; / ~ to logic
argument
argumentative essay
claim
conclusion
introduction
reasoning
support

9.9. Activities
1. *Read again the essay presented in **Unit 6**, **Activity 2**.*
a) *Identify the claim.*
b) *What type(s) of support does this student offer for his claim? Look for facts, examples and opinions.*
d) *What kind of reasoning is used?*
e) *Could you make any alterations / improvements as far as support or reasoning strategies are concerned to make the author's point more convincing?*

2. *Read the text below on **The Measurement Explosion**.*
a) *What is the author's claim? Where is it placed (beginning, middle, end)?*

b) *Examine the support given by the author. Fill in this table selecting from the text.*

Support

Facts	Examples	Opinions

c) *What types of reasoning does the author use? Fill in the table with appropriate examples:*

Logical Appeals	Appeals to Authority	Emotional Appeals

The Measurement Explosion

The story–apocryphal, one supposes–goes like this. A Scottish farmer always had prize sheep to take to market, while neighbouring farmers' sheep were consistently puny. When a visitor once asked him his secret, he said "While they' re weighing their sheep, I' m fattening mine." A fundamental tool of engineers and scientists is that of measurement, but is it possible that, like the farmers' neighbours, we sometimes overdo it?

Engineers and scientists are trained in the scientific method, a central step of which is measurement. Lord Kelvin wrote: "When you can measure what you are speaking about and express it in numbers, you know something about it, and when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind". Good advice for scientists

and engineers, but there are surely times when good decisions are made on the basis of less than complete data.

Sophisticated sensors, new measurement techniques, and the ability to make massive measurements and manipulate data rapidly means that traditional measurements can be made more efficiently and at low cost, and also that hitherto impossible measurements are now possible.

This bodes well for some. Lord Kelvin would have been ecstatic with today's tools. The ability to capture physical phenomena at higher speeds and micro levels should delight scientists. The new measurement milieu is also a boon to engineers and entrepreneurs. As one example, petroleum engineers can measure and map oil-bearing terrain in three dimensions to reduce the risk of drilling dry holes and to increase the probability of selecting rich wells.

On the other hand, the ease and speed with which measurements can be made suggests the possibility of instrumentation or measurement overkill. Consider the vast quantity of telemetry data transmitted to ground stations that has never been processed. Programs for processing some of it have become obsolete so that it may never be used (just as well, say some, who think much of it was unnecessary). Consider also the petroleum prospecting data mentioned earlier. Some of it, too, may never be decoded because of the oscillating economies of worldwide oil production. In the meantime, the storage of such data requires more and more space, so that data once considered "free" may no longer be so, and some may have to be purged because of high storage costs.

Meanwhile, the management information specialists, thanks again to our technology, find ingenious and inexpensive ways to input to storage anything that has ever been measured or recorded. Again the allure of cheap memory and potential accessibility invites over measurement and over banking of data the customer may never call for, or may access and under- or misuse.

Some fear these new capabilities may foster a culture of conservative engineers and managers, and perhaps even conservative entrepreneurs, if that is not an oxymoron. In business, the ease of re-researching, acquiring, and rapidly processing business data encourages the formation of committees, task forces, and study groups who step through discovery, analysis, and recommendation phases. While they are thus engaged, the competition, like the Scottish farmer, may be fattening its sheep.

How would a person like David Sarnoff behave in today's environment? Would he make the decision to invest millions in colour television on the basis of the scant information he then had? Or would he call for extensive technical and market studies, some of which might have delayed or altered the courageous decision he made to proceed?

Another advantage of having lots more data than we once did is the proliferation of ways in which we can combine the data. It is enticing to seek correlations that may or may not exist, when it is so easy to do so. The danger may be that the intuitive spirit may be quelled while the quest for new insight is carried to cautious extremes.

As the ability of more people to acquire and process data increases, the divisions of responsibility and authority may erode. Everyone will be tempted to do jobs other than his or her own. If it becomes so easy to access and process the data to which only the expert was once privy, the temptation to do so may prove irresistible. What an easy way to double-check the accuracy of corporate departments whose recommendations you always suspected, while at the same time finding out whether their boasts about the skills required were exaggerated.

Many people are agreed that half the measurements made in the world today are unnecessary. The trouble is, no one knows which half. Maybe we should form a committee to study this. Of course, they'll need hard data – and some new measurements...

Donald Christiansen

3. *Look again at the text above and answer some more questions:*
a) Does this text reflect the organisational pattern presented in this chapter? If it is different, how does it differ?
b) Review the common ground techniques presented earlier in this course. Which technique is used in the introduction?
c) How would you characterise the tone of this passage?
*d) List the arguments for and against scientific measurements given by the author. Do you agree **or** disagree with the author's point of view? Why?*

4. *Using the information and the pattern of organisation presented in this chapter, write an argumentative essay on one of these topics*:
• All faculties should have an entrance examination. Discuss.
• It is never too late to attend a college or a university. Discuss.
• Is there intelligent life on other planets? Discuss.
• Which is more important for you**:** status or money? Discuss.

10 WRITING A LABORATORY REPORT

Engineering students write many laboratory reports. Carrying out experimental or laboratory work and writing reports on it are part of the standard assessment requirements for various specialisms. You, too, probably wrote such reports last academic year and are writing scientific reports for your lab classes this year. You will probably write laboratory reports next year and then the year after until you graduate.

We assume, therefore, that you know *how* to write a laboratory report in Romanian. This chapter presents the basics of technical report writing in English. As such, it focuses on the following aspects: *layout, main sections, function of each section, language*.

Laboratory reports are specific for academic settings. The 'writers' are in this case students and the readers – their teachers. Unlike research articles, student laboratory reports do not add something new to the existing body of knowledge of the respective discipline; they are, in fact, mere repetitions of standard laboratory procedures, written, as Bhatia (1993:93) points out "in order to understand theory, to practise established procedures and to show awareness of the relationship between theory and practice". In addition to these reasons, connected to the content area and experimental procedures specific for various specialisms, laboratory reports also have other benefits: they discipline your mind, research methods and style. As such they represent good practice for other kinds of texts linked with the scientific and technical field: research papers and articles, dissertations.

10.1. Student Laboratory Report: Layout

The standard sections of a report and their respective functions are given in the table below, adapted from Dudley - Evans (1985:2).

Section	Function
1. Title	Tells the reader: • what the report is about • what was measured in the experiment • how the measurement was carried out
2. Abstract (not always required)	Summarises briefly: • the aim of the experiment • the method used • the main result
3. Aim (Objective)	• states, usually in **one** sentence, the main reason for carrying out the experiment:
4. Introduction / Theoretical Background	• introduces reader to the experiment • presents theoretical background
5. Equipment and Materials / Apparatus	The section describes • essential features of equipment or materials • how the equipment works This section is usually accompanied by a diagram
6. Procedure	Describes: • steps followed in carrying out the experiment
7. Results	The section presents results as: • graphs • tables
8. Discussion of Results	Usually the most important section • comments on results obtained • explains unexpected results
9. Conclusions	The section • summarises discussion of results • states whether aims have been achieved or not

10. References	List of sources quoted or referred to in the order in which they are mentioned
11. Appendices (where necessary)	Tables, graphs, equations presenting related information

There can be certain variations in the structure of a laboratory report,

e.g. • the 'Abstract' is not always required

• the 'Appendices' are not always necessary

• the 'Aim', 'Theoretical background' and 'Apparatus' can be included in the 'Introduction'.

10.2. Model Report
Report: Verification of the Zener Diode Volt-Ampere Breakdown Characteristic

Aim: To verify that in the reverse breakdown region, a Zener diode maintains a constant voltage, even though the current may change drastically.

Introduction

The Zener diode is used for voltage regulation and is important in power-supply applications. The Zener diode is a silicon pn junction device which is optimised for operation in the reverse breakdown region. When a diode reaches reverse breakdown, its voltage remains almost constant even though the current may change drastically.

As the reverse voltage (V_R) is increased, the reverse current (I_R) remains extremely small up to the 'knee' of the curve. At this point, the breakdown effect begins; the Zener resistance (r_z) begins to decrease as the current (I_Z) increases rapidly. From the bottom of the knee, the breakdown voltage (Vz) remains essentially constant. This regulating ability is the key feature of the Zener diode. It

maintains an essentially constant voltage across its terminals over a specific range of reverse current values [1],[2].

This report describes an experiment to verify the Zener diode breakdown characteristic for reverse current.

Apparatus

The apparatus used is shown in Fig.1. This electronic circuit includes the following:

• a cell (E)
• a Zener diode D210
• a resistor (R) of 680 Ω
• a voltmeter
• a milliammeter
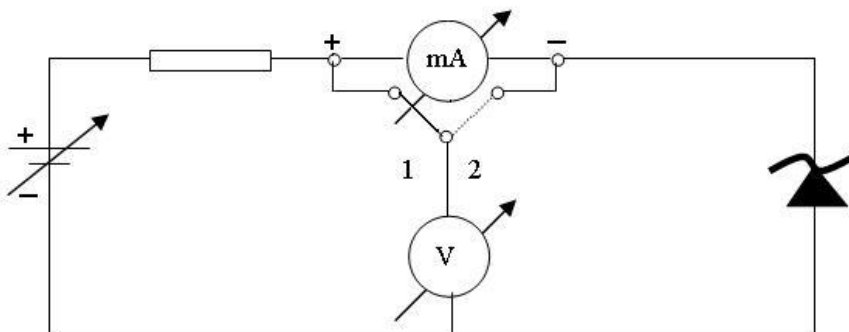
Fig.1

Procedure

First the circuit was connected as in Fig. 1. An external reverse-biased voltage was applied to the Zener diode. Then reverse voltage was increased and its values were measured and noted down in Table 1, together with the corresponding values of the current. When the diode reached its reverse breakdown, the volt-ampere characteristic of Zener diodes was checked, by measuring the current and the voltage. A range of values of I_Z was used, so

that the value of V_z (breakdown voltage) could be checked over a number of currents.

Table 1

Iz (mA)	-0.1	-1	-2	-5	-8	-10
Vz (V)	-2	-2.8	-2.9	-3.4	-3.4	-3.4

Discussion of Results

The values in the table show that, up to the breakdown point, although the reverse voltage is increased, the reverse current remains extremely small. When the breakdown region is reached, the current (I_z) increases rapidly, while the voltage remains practically constant across the diode terminals, its value being equal to that of the breakdown voltage.

Conclusions

From the results obtained in the experiment, it is clear that, once the reverse breakdown is reached, for any reverse current values over a specified minimum-maximum range, the voltage remains almost constant. Thus, the experimental data confirmed the volt-ampere characteristic of Zener diodes.

References

[1] Floyd, Th.L., *Electronic Devices* (2nd edition), New York**:** Macmillan, 1988.
[2] Maxim, Gh., Maxim, A., *Dispozitive şi circuite electronice – Lucrări practice*, Univ. Tehnică "Gh. Asachi" Iaşi: Rotaprint, 1998.

Now that you have read this report, try to answer the following questions:
a) What are the headings in the report above? Do they stand out in any way?
b) Compare the sections of this report with those in the standard

layout. Is there anything missing?

Look at the verbs in the various sections of the report presented above and complete the table below:

Section	Verb Tense
Introduction	
Procedure	
Discussion of Results	
Conclusion	

*A laboratory report is written in **formal style**. How is formality achieved in **this** report? Give examples of the following*:

- **formal, specialised words** :
- **impersonal use of the passive** :

Change these sentences into the active:

- An external reverse-biased current was applied to the Zener diode.
- Then the reverse voltage was increased and its values were measured and noted down...

How would these changes affect the report?

In what follows, we shall discuss each section from the point of view of its function and specific language.

10.3. The Title

As with other texts, the **title** is the first thing we read in a report. Each laboratory report has a title and several headings. The title presents some formal and functional characteristics:

Typographical Features

The title of a report can be written in **indented style** (centred) or in **block style** (left alignment). Bold letters, bigger than those of the section headings are used for the title.

The nouns, verbs, adjectives, adverbs and pronouns are capitalised.

Function

As already shown, the title tells the reader:
• what the report is about
• what was measured in the experiment
• how the measurement was carried out

Read the following lab report titles and complete the table below for each title:
1. The Measurement of Capacitor Parameters by Means of AC Bridges
2. The Determination of Currents and Voltages by Means of the Compensation Method.
3. Verification of the Law of Reflection using a Plane Mirror.

Nr.	What the report is about	What was measured	How the measurement was done
1.			
2.			
3.			

Form. Function Correlation

While examining the titles above, you have probably noticed that **not** all titles include the words *measurement* or *determination*. The wording of a lab report title depends on the type of experiment described. There are four basic types of experiments:
a) Verifying laws and principles;
b) Measuring or determining the value of a property;
c) Comparing various methods of determining the value of a property;
d) Comparing experimental results with theoretical results.

1. Comparison of the Different Methods of Calculating Velocity
2. Verification of the Zener Diode Volt-Ampere Breakdown Characteristic
3. Comparison of the Value of Central Vertical Deflection of a Beam with that Predicted by Simple Bending Theory

4. The Accurate Measurement of an Unknown Resistor.

a	b	c	d

Words Used in Titles

Depending on the type of experiment, certain words are likely to appear in titles.

Below are certain words which appear frequently in lab reports titles. Match each word with the appropriate definition:

1. **Verification**	a) finding the value of a property by comparison with a standard
2. **Study**	b) a careful study by means of observations and tests
3. **Investigation**	c) a careful observation of a phenomenon
4. **Measurement** or **determination**	d) carrying out an experiment to show that a scientific law is true

10.4. The Abstract

The **abstract** may not appear at all in a laboratory report, or may be included in the introduction.

The American National Standards Institute (ANSI) defines **abstract** as "an abbreviated, accurate representation of the contents

of a document, preferably prepared by its author(s) for publication with it." (1979:1)

Although the abstract of a student laboratory report is not meant for publication, its purpose is identical to that of all research paper abstracts, i.e. to give the reader an exact and concise knowledge of the whole document.

Function

An abstract briefly summarises:
- the aim of the experiment
- the method used
- the main result(s)

As such, the abstract of a student laboratory report tries to answer the following questions:
- What the student did
- How he did it
- What the student found
- What he concluded

---

1. *Read the following abstract. What title would you give to the laboratory report incorporating this abstract*?

The aim of this experiment was to verify the proportional relationship between the period of a simple pendulum and its length. This verification was carried out by measuring for each length the corresponding period. The results obtained confirmed the relationship between the two parameters.

2. *In the abstract above, say which sentences describe*:
- the aim
- the method
- the main results

3. *Which verb tense is used? Which voice is dominant (active or passive)*?

Language : Verb Tense and Voice

As you have probably discovered by now, the verbs in this abstract are in the **Past Tense**. The Present Tense is not widely used in student laboratory reports because such documents, as already shown, do not bring something new to the existing body of knowledge; instead, they repeat standard procedures.

You can also notice the **impersonal use of the passive** ; this is only natural for a laboratory report, which is a piece of *formal* writing, in which the trace of the writer's ego should disappear.

Therefore, to conclude, we could say that student laboratory abstracts present two main characteristics as far as verbs are concerned:

- use of **Past Tense**
- impersonal use of the **passive**

10.5. Aim/Objective and Introduction

10.5.1. Aim. A one-sentence statement of the aim is usually included in the report, either as a separate section or as part of the 'Introduction'.

Function

The aim states the main reason for carrying out the experiment.

Look at the example of the aim for the model report presented earlier:

Aim: To verify that in the reverse breakdown region, a Zener diode maintains a constant voltage, even though the current may change drastically.

This aim could also be expressed as:

The aim of the experiment was to verify that, in the reverse breakdown region, a Zener diode maintains a constant voltage, even though the current may change drastically.

Language

Here are several statements that express the aim of various experiments. Read them. Can you discern any specific patterns?
1. The aim of the experiment was to verify Archimedes' Principle.
2. The aim of the experiment was to measure the resistivity of a uniform iron wire.
3. The aim of the experiment was to compare different methods of calculating velocity.
4. The aim of the experiment was to demonstrate that air has weight.

If we examine the abstracts above, we can discern a common pattern:

		to verify to demonstrate to show	that	air has weight
The aim of the experiment	was	to measure to determine to calculate	the resistivity	
		to compare	different methods	

10.5.2. The Introduction

As in the case of essay introductions, laboratory report introductions are often written at the end, when the student already knows what the body of the report contains. Unlike essay introductions, which are meant both to establish a frame of reference and gain the reader's attention, **student laboratory report introductions** are meant to show awareness and understanding of established research procedures or theory on which the experiment is based.

Function

A lab report introduction usually has a tripartite structure:
1. States aim of the experiment;

2. Introduces reader to the experiment (establishes field);
3. Presents theoretical background.

Less often, the 'Apparatus' section is also included in the 'Introduction'.

Read the lab report introduction below. Give it a title: Which sentences
- *state the aim*
- *establish field*
- *present theoretical knowledge*

When a simple pendulum is in motion, the brass bob swings from point A to point B, as shown in the diagram below. This motion is called oscillatory action, and the time taken for one complete oscillation is called the period or periodic time of the pendulum (T).
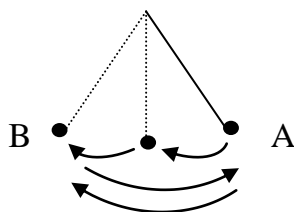
For an ideal pendulum, the assumptions made are as follows:
1) The period of a pendulum is independent of the mass or material of the pendulum.
2) The period of a pendulum is independent of the amplitude if the amplitude is small.

Mathematical analysis shows that the period of the pendulum is proportional to the square root of its length. The aim of this experiment was to verify this statement.

Language: Verb Tenses

*Have a look at the **Introduction** above. Which verb tense is used? Why?*

With the exception of the past form *was*, which appears in the description of the aim, all the verbs are in the **Present Simple**. This is quite natural, because scientific or technical principles are regarded as universal truths (although Einstein once shattered some of these well-established principles). As far as voice is concerned, the verbs are either in the **Active** or **Passive Voice**.

Therefore, as far as verb forms are concerned, lab report introductions display the following characteristics:

- Tense: **Present**
- Voice: **Active** or **Passive**

10.6. Equipment and Materials / Apparatus

This section can be separate, or can appear as part of the 'Introduction'.

Function

The 'Apparatus' section describes:

- the equipment or materials used in the experiment
- how the equipment works

Form

This section is usually accompanied by a **diagram** (see model report).

Formally, this part of the report can appear as a list of equipment and materials.

 e.g.   The circuit diagram is shown in Fig. 1, where:

- AT is an autotransformer
- R is a regulating resistance of 500 Ω and 1.2 A
- Hz is a reed-type frequency meter
- A is a MAVO multimeter, working as an ammeter; c = 1.5; or a ferromagnetic milliammeter; I_n = 50, 100, 200 mA; c = 0.5
- V is a MAVO multimeter, working as an ammeter; C_V = 1.5
- C_x is a condenser the capacitance of which was measured

The 'Apparatus' section can also appear as a paragraph made up of complete sentences that describe the equipment and materials used in the experiment.

e.g. The form of the metre bridge used is shown in Fig.2 where AB is a uniform wire one metre long and C is a sliding contact. The galvanometer is protected by a resistance which can be short-circuited by a switch to provide increased sensitivity. The unknown resistance R and a standard resistor S are connected by thick copper strips.

Language: Verb Tense
In case you choose to describe the equipment used in complete sentences that form a paragraph, use:
• the **Present Simple**
• mostly the **Passive Voice** (your report is a **formal** piece of writing).

10.7. Procedure
Function
The purpose of this section is to describe the steps followed in carrying out an experiment.

When carrying out an experiment, you usually follow a set of instructions set by the teacher.

e.g. **Instructions**
Determination of Voltage in a Series and Parallel Circuit Using an Analogue Voltmeter
1. First close the switch. Measure the voltages across the terminals of the two loads and across the terminals of the generator.
2. Then open the switch and measure again the voltages across the terminals of the two loads and across the terminals of the generator.

In the lab report 'Procedure' section, these **instructions** are changed into **dynamic descriptions**.

e.g. **Procedure**

First the switch was closed. The voltages across the terminals of the two loads and across the terminals of the generator were measured. Then the switch was opened. The voltages across the terminals of the two loads and across the terminals of the generator were measured again.

---

*Examine the set of instructions above (text **A**). Find examples of verbs that express instructions. Write them in the table below. Which is the corresponding form of these verbs in the Procedure section?*

Instructions		Procedure
1.	➝	1.
2.	➝	2.
3.	➝	3.

What conclusion can you draw from here about the specific verb tense and voice in the procedure section?

Although the teacher's instructions for carrying out the experiment are generally converted into the **Past Tense Passive Voice**, unnecessary details in the instructions should not be included in the procedure section,

e.g. **Determination of the Capacitance and of Inductance Using an Ammeter and a Voltmeter**
Instructions

First take the following precautions: move the cursor AT in a position that corresponds to minimum voltage; move the cursor of the rheostat in a position corresponding to maximum resistivity; connect the ammeter (A) within the domain 5 A and the voltmeter (V) within the domain of 250 V. Connect the supply voltage and increase it gradually using cursor AT. Select the measurement ranges corresponding to A and V. Read the values of *U, I* and *f* and calculate the capacitor value with the equation:

(1)
$$C = \frac{10^{6}}{2\pi f \sqrt{\dfrac{u^{2}}{I^{2}} - r_{A}^{2}}}$$

Procedure

Before the experiment the cursor AT was moved in a position that corresponded to minimum voltage. Then the cursor of the rheostat was moved in a position corresponding to maximum resistivity. The supply voltage was connected, then gradually increased, using cursor AT. The measurement ranges corresponding to A and V were selected. The values of *U, I* and *f* were read.

Look at the instructions above. Which parts are omitted in the **Procedure** *section*?

Some important tips on how to write the procedure starting from instructions on the experiment are the following. To make it easier for you, these tips have been placed under two headings: **Do / Don' t**

Do	Don' t
• include the most important steps in the experiment	• include unnecessary detail
• briefly summarise precautions	• include all the precautions
• explain why certain steps were taken	• include observations (e.g. the mass may be + or −)
• include sequencing words (see **Appendices**)	• report instructions about calculations

As you have probably noticed, the 'Procedure' section includes verbs with the following characteristics:

- Tense: **Past**
- Voice: mostly **Passive**

In describing procedure, certain verbs are frequently used. Examples of such verbs are given in the table below. Match the former half of each sentence (1-13) with a suitable verb.

	was/ were	
1. The apparatus		a) adjusted
2. All the data		b) carried out
3. The initial reading of the position		c) checked
4. The lens of the microscope		d) conducted
5. A graph of resistance against length in a wire of constant cross - sectional area		e) determined
		f) followed
		g) noted
6. A survey of students' favourite spare time activities		h) observed
		i) plotted
7. To ensure that there were no leaks, all the valves		j) recorded
		k) set at
8. Variations in temperature		l) set up
9. A test of the strength of various materials		m) tested
10. The exact force needed to overcome friction		
11. The safety precautions outlined in the manual		

12. The accuracy of the measurements		
13. At the beginning of the experiment, the temperature		

10.8. Results. Discussion of Results

These two sections are probably the most important in your lab report. They represent **your** contribution to the experiment.

Results are given in two main forms:

• **tables**

• **graphs**

In the 'Discussion of Results' section you do some of the following:

• compare your experimental results with accepted values

• compare your experimental results with each other

• explain errors

• describe a linear relationship as shown in a graph

• comment on the suitability of the method used

10.8.1. Comparison of Results with Standard Values

Look at the following table presenting results from an experiment meant to determine the melting point of various substances. Read the discussion that follows.

Substance	Experimental Melting Point (mean value in °C)	Standard Value (°C)
Ice	0.5	
Phosphorus	43.8	
Glucose	136.0	14
Lead	324.0	32
Zinc	408.0	41

Discussion of Results

The table shows the average of the results obtained for five

substances melted the same day under the same atmospheric conditions. Comparison of the experimentally determined values with standard values shows a good agreement in the case of ice, phosphorus and lead. However, the values obtained for glucose and zinc, 136 °C and 408 °C respectively, are significantly different from the standard values. These discrepancies may be due to lack of purity in the substance.

Now answer these questions:

1. Which sentence acts as an introduction to the discussion?
2. Which sentence presents results that agree with standard values?
3. Which sentence describes results that do not agree with standard values?

4. Which sentence explains differences between the experimental results and the standard values?
5. What tense is used in the discussion ? Are there any verbs which are not in that tense? Why is that?

Language

Here are some patterns that may help you to discuss results which agree/do not agree with standard values.

The	results figures	are consistent with agree with	the standard value
	findings values	are significantly different from do not agree with	the published value

10.8.2. Comparison between Results

Sometimes in a report you need to compare different sets of results:

Look at this table that compares the production of car components at different temperatures in two different factories. The aim of the research project was to determine the optimum working temperature for each of these factories.

	10 -12 °C	13-15 °C	16-18 °C	19-21 °C	22-24 °C

Factory A	81	92	96	101	93
Factory B	85	89	102	93	87

The table shows the number of car components produced at different temperatures in the two factories under study, designated A and B.

The results show that in both factories there is a correlation between the number of car components produced and the working temperature. Thus, in both factories, the number of car components produced by A and B is relatively small for low working temperatures (81 and 85 respectively). This number is, up to a certain optimum point, directly proportional to the working temperature: the higher the temperature, the greater the number of car components produced. As the figures show, the optimum working temperature for Factory A is between 19 - 21°C, whereas for Factory B it has lower values, ranging between 16-18°C. Under the above-mentioned temperature conditions, the number of car components produced by Factory A and B was the highest (101 and 102 respectively). When the temperature increased above 19-21°C in the case of Factory A and above 16-18 °C in the case of Factory B, the number of car components produced started to decrease gradually. Therefore, the results show that for temperatures above the optimum point, productivity becomes inversely proportional to temperature values.

Language

In order to compare results, you need to describe similarities and differences. The following phrases might help you. Place them under the appropriate heading:

Comparing things	Similar	Contrasting

1. Comparison of X and Y
2. X... , (whereas / while) Y
3. ... compared to ...
4. X and Y are (radically / significantly) different
5. X ... but Y...
6. Both X and Y
7. Like X, Y ...
8. In contrast to X, Y...
9. If X and Y are compared
10. Unlike X, Y...

10.8.3. Explanation of Error

Whenever a result is different from what you expected, you must give reasons. In the paragraph discussing the results of the melting point experiment the writer gave reasons for inaccurate results in the very last sentence. Some patterns that may be used when you need to give reasons for unexpected inaccurate results are the following:

The	error difference discrepancy	may be	the result of due to

As can be seen from the samples given, two main verb tenses are used:

- **Present Tense** (to describe table or graph)
- **Past Tense** (to give details about the experiment)

10.9. Conclusions

Most reports of laboratory or workshop experiments end with a **conclusion**. As shown at the beginning of this chapter, the conclusion

- summarises the discussion of results;
- states whether the aim of the experiment has been achieved or not.
    This final section can also
- comment on the method used;
- give recommendations about future work.

The conclusion should be linked to the aim and type of experiment (see the four types of experiments presented earlier). Thus, in the case of an experiment meant to verify the proportional relationship between the period of a simple pendulum and its length, in which all the results with only two exceptions, confirmed the mathematical principle, a suitable conclusion might be:

The results obtained are sufficiently accurate to verify the principle that the period of a simple pendulum is proportional to the square root of its length. Two results which were inconsistent with the rest were probably due to mistakes in the experimental procedure.

State the function(s) of each sentence in the conclusion presented above.

Language

If we examine the verbs in this conclusion, we notice that two tenses are used:

- **Present Tense**
- **Past Tense**

How do you explain this? Why is there that some verbs are in the present, while others are in the past?

10.10. Summary

This chapter focused on writing laboratory reports. We began by presenting the general structure of a laboratory report and the function of its component parts. Each section was then exemplified and analysed in detail from the point of view of its *function*, *content* and *specific language* features. Many activities were included to help you practise writing various sections of a student laboratory report. A model report and many samples of sections were also presented.

10.11. Keywords

abstract	introduction
aim	laboratory report
apparatus	procedure
appendices	references
breakdown characteristic	results
conclusion	reverse-biased voltage
discussion of results	reverse current
equipment and materials	title

10.12. Activities

1. *Compare the general structure of the laboratory report presented in this unit with the structure of laboratory reports you currently write for your specialist subjects. Do you include the same sections? Are there any rubrics that you normally include and do not appear here? Are there any rubrics that appear here but you do not normally include?*

In the list below, place a tick (3) in case these headings normally appear in the laboratory reports you write for your specialisms:

- Title
- Abstract
- Aim / Objective

- Introduction
- Equipment and Materials/Apparatus
- Procedure
- Results
- Discussion of Results
- Conclusions
- References
- Appendices

2. *Now compare the verb tenses and voice you use when you write a laboratory report in Romanian with the verb tenses and voice used in English:*

Section	Verb Tenses	
	Romanian	**English**
Introduction		
Procedure		
Discussion of Results		
Conclusion		

3. *Using the layout suggested in this chapter, write a laboratory report entitled* **Ohmmeter Check of Transistor Junctions**.

11 WRITING A RESEARCH REPORT

At the end of your studies you need to write a research report: a diploma paper (to get your engineering degree) a dissertation (to get your MSc/MEng degree), a doctoral thesis (to get your PhD). Although the level and volume of scientific knowledge, the degree of originality and novelty increase progressively as you move from a diploma paper to a doctoral thesis, the general structure is more or less similar.

11.1. Basic Framework for a Research Report

Preliminaries	1. Title
	2. Acknowledgements
	3. Contents / List of contents
	4. List of figures/tables/diagrams/photographs
Introduction	5. Introducing field and topic
	6. Summarising previous research
	7. Preparing for present research
	8. Introducing present research
Main body	9. Review of the literature
	10. Design of the investigation
	11. Methods and procedures/Measurement techniques used
	12. Results
	13. Discussion of results
Conclusion	14. Summary of conclusions
Extras	15. Bibliography
	16. Appendices

There may be slight variations to the above. For example, 'Acknowledgements' can appear *before* or *after* the 'List of contents'.

If 'Summarising previous research' in the 'Introduction' is rather comprehensive, then the 'Review of the literature' section need not appear in the main body of the report. If it is brief, it will be followed by a special section in the main body.

Other items, such as 'Dedication', 'List of abbreviations' can be included in the 'Preliminaries'.

Below you can find descriptions (a-p) of each section (1-16) in a research report. Decide which description goes with which section. Write the corresponding letter in each box:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

a) The presentation in a logical order of information and data (usually in the form of tables or graphs) upon which a decision can be made to accept or reject the hypotheses.

b) Compilation of important data and illustrative material, placed outside the main body of the text.

c) Detailed description and discussion of testing devices or instruments used. A discussion of the analysis to be applied to the results to test the hypotheses.

d) A presentation of the field and topic under study. Description of key features of the situation and current knowledge.

e) A statement and discussion of the hypotheses and the theoretical structure in which they will be tested and examined.

f) The sections and subsections with a corresponding page number.

g) A concise account of the main findings, and the possible implications or effects.

h) The first element that appears and describes the paper in the fewest words possible.

i) Thanking supervisors, colleagues and friends for their assistance.

j) A busy, critical account of previous research in that specific field.

k) The sequence of tables, charts or diagrams that appear in the text with the corresponding page number.

l) A survey of selective, relevant and appropriate reading. Evidence of original and critical thinking applied to sources referred to.

m) An accurate listing in alphabetical order of all the sources quoted in the text.

n) Establishing a niche in current knowledge or that topic which might be occupied by your piece of research.

o) A brief discussion of the nature of your research and the reasons for undertaking it. A clear declaration of proposals and hypotheses.

p) A presentation of the principles, relationships, correlations and generalisations shown by the results. The interpretation of the results and their relationship to the research problem and hypotheses. The making of deduction and inferences. The making of recommendations.

Let us now turn our attention to a very important part of the research report – the 'Introduction'.

11.2. Research Report Introductions: Structure and Functions

Like essay introductions or lab report introductions, diploma paper or MEng dissertation introductions can be written *before* or *after* the main body of the text. If you write your introduction *before* making a first draft of your paper, your view will be more focused, in that you will not be diverted from the hypothesis you have formulated. If you prefer to do that, remember however, not to demand perfection of a first draft introduction, especially since the main body of your text has not yet been written. Therefore, once it is written, your introduction may well need to change. You may find it easier to write your introduction *after* the first draft of your paper has been finished. If you choose to do that, avoid the temptation of being diverted from the main problem you are discussing or from the working hypotheses you have devised.

No matter what approach you might use, remember that the introduction serves as a *transition* by moving the reader from the world outside of your paper or dissertation to the world within. In research report introductions there is a smooth, gradual transition

from the general to the specific, from the known to the unknown, and this is reflected in the cognitive structure.

Different authors have found a different number of constituent parts in research report introductions, depending on specific individual or cultural variations, reflected in the nature of the samples used.

The structure presented here is a combination of the models offered by Swales (1981; 1985) and Dudley-Evans (1989). It has the advantage of being practical and quite straightforward.

Introduction

Introducing field and topic
- introducing field
- introducing general topic
- introducing particular topic

Summarising previous research

Preparing for present research by
- indicating a gap in previous research
- indicating a possible extension of previous research

Introducing present research by
- stating aim of the research
  or
- describing briefly the work carried out
- justifying the research

Read the following research report introduction. Can you identify the subcomponents of each part? Are they any subcomponents missing?

Introduction

Several recent power system blackouts were related to voltage collapse, which is characterised by a slow variation in the system operating point in such a way that voltage magnitudes at

load buses gradually decrease until a sharp, accelerated change occurs. Voltage collapse has been especially experienced by heavily loaded power systems subject to an increase in load demands. There has been a wide consensus that as power systems operate under increasingly stressed conditions, the ability to maintain voltage stability to avoid collapse becomes a serious concern.

Among several examples of voltage collapse, the occurrence in Japan in 1987 [1] was due to load variations and the occurrence in Sweden in 1982 [2] was caused by a contingency. Voltage collapse due to contingencies has been studied by several researchers, see for example [3-9], where the key issues are the feasibility of the stable equilibrium point after contingency and the estimate of its stability region (region of attraction). Voltage collapse has also been attributed to a lack of reactive power support, which can be equivalently regarded as due to increases in load demand [10].

A number of performance indices intended to measure the severity of the VC problem have been proposed in the literature. Among them, the minimum singular value in [11], later pursued in [12], and the condition number in [13] of system Jacobian intend some measure of how far the system is away from the point at which the system Jacobian becomes singular. The performance index proposed in [14] and [16] is based on the regular distance between the current stable equilibrium point and the closest unstable equilibrium point in a Euclidean sense. The performance index proposed in [16,17] measures the energy distance between the current stable equilibrium point and the closest unstable equilibrium point using an energy function. These performance indices can be viewed as providing some measure relative to the "distance" between the current operating point and the bifurcation point. Note that all these performance indices are defined in the state space of power system models instead of in the parameter space. Thus, these performance indices cannot directly answer questions such as: "Can the system withstand a 100 MVar increase on bus 11?" or "Can the

system withstand a simultaneous increase of 70 MW on bus 2 and 50 Mvars on bus 6?".

Determination of margins in the parameter space is still a new concept which may have been spurred by the concept presented in [18]. In [19], a method was proposed to compute the reactive power margin. The method utilizes a general optimization technique and only deals with reactive powers. Other methods which solve an extended (2n+1) - dimensional system of equations characterizing the saddle-node bifurcation point were proposed in [20] and more recently in [21]. The methods attempt to compute the saddle-node bifurcation point directly. The success of these two methods depends greatly on a good initial guess of the desired saddle-node bifurcation point. Otherwise, the methods may diverge or converge to an undesired saddle-node bifurcation point. These two methods demand a great deal of computational effort, a concern which the use of indices attempts to alleviate. Other related works on the parameter space are available in the literature. Computing sensitivity with respect to any parameters for load flow margin can be found in [22] and computing sensitivity with respect to load powers can be found in [19,23,24].

One basic requirement for useful performance indices is their function to reflect the degree of direct mechanism leading the underlying system toward an undesired stage. In the context of voltage collapse in power systems, a useful performance index must have the ability to
1. measure the amount of load increase that the system can tolerate before collapse (when the underlying mechanism of collapse is due to load variations), or
2. assess whether the system can sustain a contingency without collapse (when the underlying mechanism of collapse is caused by a contingency) and measure the severity of the contingency.

The existing performance indices, however, generally do not exhibit any obvious relations between their value and the amount of the underlying mechanism that the system can tolerate before

collapse. We assert that, in order to provide a direct relationship between its value and the amount of load increases that the system can withstand before collapse, the performance index must be developed in the parameter space (i.e. the space of load demands) rather than the state space where the existing performance indices were developed.

In this paper we present a new performance index which provides a direct relationship between its value and the amount of load variations that the system can withstand before collapse. The new performance index has the following distinguishing features

• It is more practical than existing ones in terms of its ability to provide a direct relationship between its value and the amount of parameter variation that the system can withstand before collapse. More specifically, it can be readily interpreted by operators to answer questions such as "Can the system withstand a simultaneous increase of 70 MW, 40 Mvars on bus 2, 100 MW on bus 5 and 50 Mvars on bus 16?".

• It provides useful information as to how to derive load-shedding schemes to avoid voltage collapse.

The new performance index proposed in this paper has been tested on several power systems. This index presents the distinct advantage of reduced computation and of using basic power system technology (load flows).

<div align="right">Hsiao-Dong Chiang, René Jean-Jumeau</div>

11.3. The Research Process

One might say that this unit is upside down: it started with the end-product, i.e. the research report − its general structure and now it goes backwards − to the research process. This was in fact deliberately so: we began with the layout and organisational structure because such texts have specific organisational patterns which you need to be aware of *before* starting to write your diploma paper or your dissertation. Once you have become acquainted with

the general structure, let us have an overview of the stages in the research process.

11.3.1. Formulating a Title
It is usually better to have a broad title at the beginning. If you narrow the focus too sharply at this stage, you may overlook some important aspects. You may narrow the focus later on.

11.3.2. Doing Preliminary Research
After formulating the title, it is wise to do some preliminary research: read part of the bibliography recommended by your supervisor.

Such reading may raise 'burning' questions in your mind that you feel you would like to pursue.

11.3.3. Discovering and Generating Ideas for Your Research Report
There are three complementary techniques for doing this:

• use some of the techniques for generating ideas presented earlier in **Unit 2**;

• talk to one or two authorities on the subject (your professor, maybe also someone else);

• use a research diary or log to jot down ideas and questions that may occur to you; reactions to the materials you are reading; to try out and revise your hypotheses.

Library Research: Preliminary Reading
Here are some library research strategies that can help you to narrow down your subject more easily:
1. Start with the most general reference sources: encyclopaedias, bibliographic listings.
2. Locate specific information from
a) research papers and articles found in various journals or conference proceedings;
b) books;
c) electronic media.

During this part of your search, you may narrow down your topic. As you proceed, you will discover that library research is to some extent a self-generating process: one source will lead you – through references, citations, bibliographic entries – to others. Authors usually make a review of the literature on that subject; frequently, they will also indicate which studies they consider the most important, and why. So, there will come a moment when you realise that you have already examined the key research on the subject. This means that the library research stage of your paper is (almost) ended.

The preliminary search strategy can be seen in the diagram below (adapted from Rosen, 1995:558).

PRELIMINARY SEARCH STRATEGY

Choose a Subject

Formulate a Working Title

Generate Ideas

Use Strategies to Generate Ideas | Talk to your Professor | Keep a Research Diary

Preliminary Reading

Narrow Your Focus: Devise a Working Hypothesis

Focused Research

Reference Sources | Periodicals | Books | Electronic Sources
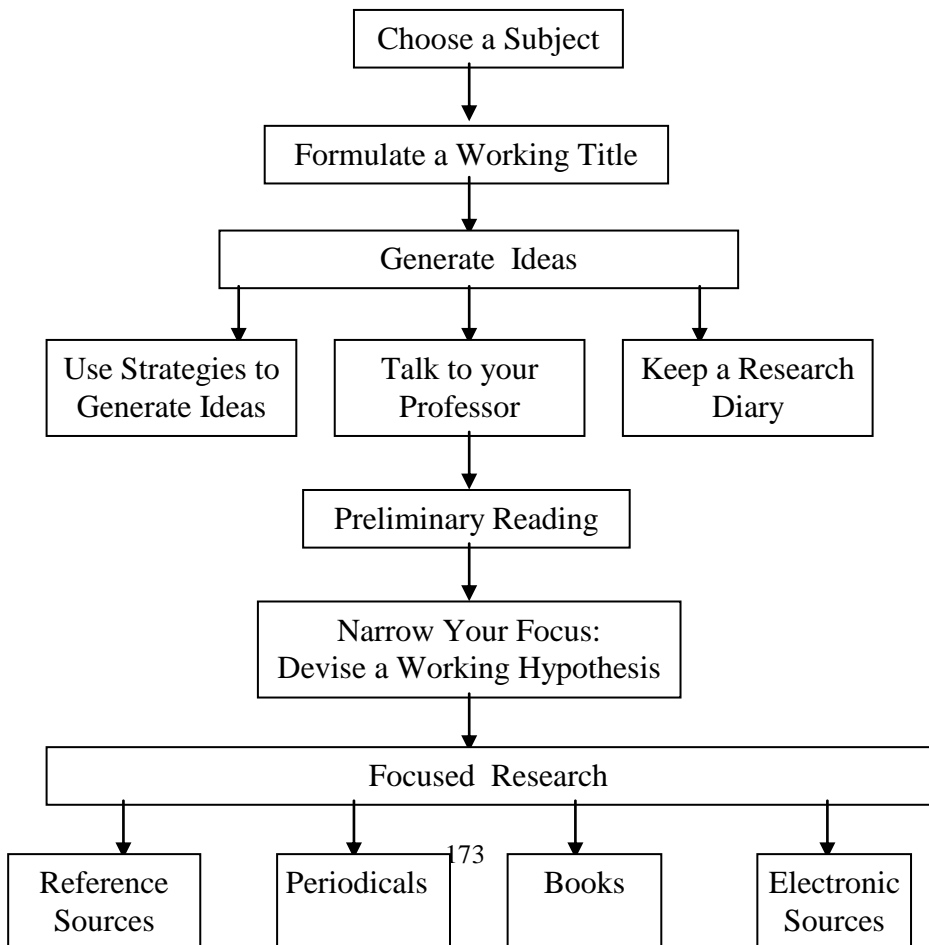
11.3.4. Devising a Working Thesis

As you continue to read about your subject, you start formulating your own ideas. These ideas and reflections will come into focus as a *working hypothesis*,

e.g.: It is possible to achieve power system security in an operating environment with many participants (power companies, independent power producers, co-generators, consumers), each attempting to optimise their own benefit, through pricing incentives and appropriate information exchange.

The working hypothesis or thesis (se also **Unit 5**) represents the main idea that shapes your thinking. It will influence your further reading; once you have devised a working thesis, the scope of your search will be more focused and better defined.

11.3.5. Focused Reading

Once you have formulated a hypothesis, start doing your focused reading in order to have more specific information to support your ideas. Before doing that, however, make a list with the key concepts you need to look for.

Available sources at this stage are:

a) **Periodical Indexes: Articles**

It is preferable for you to start your focused reading with articles and research papers from journals and magazines than with books for two main reasons:

• periodicals contain information that you cannot find in other sources;

• such information is more up to date than information found in books published during the same period.

Indexes, if available, will direct you either to periodical publications you may be interested in, or directly to topics or subject areas.

Here is a typical example of card index for periodicals which may be found in the libraries of Iaşi Technical University. Such indexes may help you a lot when you need to collect data and information for your research report.

Z 2417 IEEE TRANSACTIONS ON											
POWER SYSTEMS											
											S.U.A.
Year	Ian.	Feb.	Mar.	Apr.	Mai	Iun.	Iul.	Aug.	Sep.	Oct.	Nov.	Dec.
1986	Vol PWRS 1 (1)										
1987	Vol PWRS 2 (1)										
1992	1	2	3	4								
1993	1											
1994	1	2	3	4	(1, 2, 3, 4) index						
1995	1	2										

If you are interested in newspapers, remember that big libraries in the world have back issues of important newspapers on microfilm (e.g. *The Newspaper Index, The New York Times Index*).

b) **Computerised Databases**

Computerised databases refer to electronic indexes to a huge number of articles, reports and books. They have proliferated world wide during the last twenty years or so.

Electronic indexes can make your search efficient and comprehensive, due to some advantages:

• they are much more current than printed indexes, since they are updated very frequently;

• information from databases can be read directly from the screen, or you may have it printed;

• some electronic indexes may also provide abstracts (and in some cases complete texts) of relevant sources.

The students and professorial staff in Iaşi Technical University have now access to the on-line catalogue that provides information on the resources available in the university libraries.

Periodicals are listed in alphabetical order. The main entries are:

• Journal Title
• Year
• ISSN
• Subject

Books are listed alphabetically, according to the main author's last name. The main entries for books are:

• Author
• Title
• Publisher
• Year
• ISBN
• Local Call Number
• Subject

c) **The Card Catalogue**

Many libraries in the world have computerised all their catalogues. If the process is not complete yet, some of the older books can be accessible only through the traditional *card files*. Whether on-line or on cards, an item is classified in three ways:

• by author
• by title
• by subject

In case you do not have a bibliographic list in advance, it is good to start browsing through the subject cards, in order to locate books or your topic.

Here is an example of a library card in one of our university libraries classified by **subject**:

classification / inventory   author's last and first name

621.39 (035.5) = 111
III 3126261   GROSS, Lynne S.
  Telecommunications: an introduction to electronic media / Lynne
  S. Gross - 4th ed.- Dubuque, IA: W$_m$. C.Brown, 1992 - XIV, 506

call number

title

  5f. foto: il.; 23 cm
  Index p. 494 - 506
  Note p. 457 - 479
  ISBN 0-697-08647-X
  Repartiț ie: 352746 A, 352747 - 8E, 352746 - 8

other information   publication information

11.3.6. Using Sources

In order to support your hypothesis, you need to document it by using sources. Moreover, as we saw earlier when we were discussing about research report introductions, the very reason for

carrying out some piece of research is either the existence of a gap in previous research or your wish to extend it.

To be able to document your research, justify it and support your ideas, you first have to critically read sources and take notes.

Such reading is usually conducted at four levels or stages, each with its specific goals.

Below are the four stages of reading (numbered 1-4) and the goals (a-d). Match each stage with its appropriate goals.	
Stages	**Goals**
1. Reading to understand	a) to determine the reliability of sources, by separating *fact* from *opinion* and by assessing the author's assumptions and the evidence given.
2. Reading to respond	b) to read your sources carefully enough to be able to *react*, to *ask questions*, and to *find differences* between them.
3. Reading to evaluate	c) to determine how assumptions in one source are related to assumptions in other sources
4. Reading to synthesise	d) to familiarise yourself with your sources and determine their *relevance*.
Which of these levels of reading do you generally cover *a) when you write a scientific paper or a report?* *b) when you prepare for your exams?*	

11.3.7. Creating a Bibliography

When writing a research report, or any other text in which you quote sources, you need to create a bibliography. Or, better said, two versions:

• **a working bibliography**, which includes all the sources you locate in preparing your paper;

• **a final bibliography** based on the former, which consists of those sources that you actually *use* in writing the paper.

Tips for Creating a Working Bibliography:

• Prepare your working bibliography *while* you are consulting and compiling your sources (not afterwards). This way you can easily transfer the information you need on to your final bibliography.

• Use card files to compile your working bibliography. A card file allows you to easily alphabetise entries or to arrange them in any order you want (topic, subtopic).

• On your bibliographical card (which is in many respects similar to a library card file), record the following information:

1. **full name of author** (last name first)

2. **title** (and subtitle)

3. **publication information**
       a. place of publication
       b. name of publisher
       c. date of publication

4. **number of pages**

5. assign a **code number** to each bibliographic entry. When you take notes on that source, it is easier to use that code number, rather than write all the bibliographic information.

      Here is a sample bibliographic card:

```
⊗
Floyd, Thomas L.
Electronic Devices (Second Edition)
New York: Macmillan (1988)
834 pp.
```
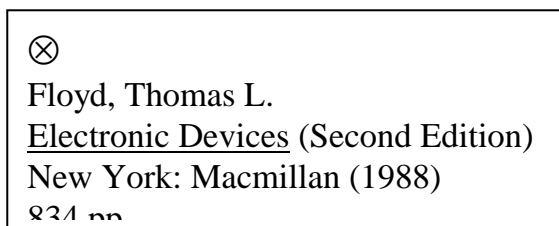
11.3.8. Making Notecards

      Just like bibliographical cards, notecards are easy to be sorted out and rearranged as you wish.

      You could use various formats for notecards, but there are some essential elements you should include:

• a **code number** (similar to the code number on the bibliographic card

• the **topic** or **subtopic** label

- the **note** itself
- a **page reference**

Limit each card to a single point or example. By doing this, it will be easier for you to arrange your cards according to the plan or sketch of your paper.

⊗

Oscillator: definition

"circuit that produces repetitive sinusoidal/ nonsinusoidal waveform on its output with dc voltages as input" (p.582)

11.3.9. Quotations

In **Unit 4**, devoted to note-making, two characteristics of quotations were touched upon:

- quotations must be placed between quotation marks (" ")
- the source must be acknowledged

There are other characteristics you should take into account when quoting. Sometimes you may need to make **additions, omissions** or **changes** to quotations for the sake of clarity, conciseness or smoothness.

Additions

If you need to **add** or **replace** some words in a passage you quote, you should place the words you add in **square brackets** [ ].

Illustration
Original passage

"He has distinguished himself not merely by his prodigious output as a physicist-notably by his contribution to the unification of the weak and electromagnetic interactions-but also for his careful and scholarly approach to popularizing physics."

Quotation

"[Steven Weinberg] has distinguished himself not merely by his prodigious output as a physicist–notably by his contribution to the

unification of the weak and electromagnetic interactions–but also for his careful and scholarly approach to popularizing physics."

Changes
If you need to **change** a capital letter to a lowercase one in order to integrate the quotation in your sentence, place the lowercase letter in **square brackets** [ ].

Illustration
Original passage
"The branch of engineering concerned with the presentation of measured data at a location remote from the source of the data."

Quotation
John Truxal defines telemetering as "[t]he branch of engineering concerned with the presentation of measured data at a location remote from the source of the data."

Omissions
If you want to omit something from the original source when quoting you can use an *ellipsis* – three spaced dots:

Illustration
Original passage
"The term electrical telemetry is utilized in contrast to radio telemetry and refers to wired telemetry systems in which the information is transmitted by variations of a voltage or current in the electric circuit."

Quotation
"The term electrical telemetry... refers to wired telemetry systems in which the information is transmitted by variations of a voltage or current in the electric circuit."

      Quoted sentences are introduced by **attributive phrases**:
      - according to
      - as X points out

When such phrases use verbs, the verbs are usually in the **Present Tense** (e.g. *points out*). Other verbs that introduce quotations are:

adds	compares	emphasises	reports
agrees	concludes	explains	says
argues	considers	finds	sees
asks	declarer	notes	shows
believes	denies	observes	suggests
claims	disagrees	relates	thinks

When you quote a longer passage (say longer than four lines), you should use a *block quotation*, i.e. set the passage apart from the text, by indenting it. You need not place *block quotations* between quotation marks.

11.4. Conventions for In-Text Citations and References

The sources you quote from or refer to are acknowledged both *in the text* of the paper or report as such and in the *bibliography*.

The i*n-text citation* is a parenthetical reference, which identifies the source.

The *bibliography* or *list of references* appears at the end of your research report and includes:
- authorship
- full title of the work
- publication information

11.4.1. In-Text Citations

The main formats for citing a source in a research article or report are: **the number system** and **the name-and-year-system**.

The Number System

The number system is the briefest form of parenthetical citation. It uses an Arabic numeral in parentheses (1) or square brackets [1] to identify a source of information. This system has two variations:

a) **References in order of first mention**. When you use this variant, you assign a reference number to a source in order of its appearance in your paper. These numbers are linked to corresponding entries in the bibliography. This convention is widely used in research papers belonging to the technical field:

Illustration

A number of performance indices intended to measure the severity of the VC problem have been proposed in the literature. Among them, the minimum singular value in [11], later pursued in [12], and the condition number in [13] of system Jacobian intend to provide some measure of how far the system is away from the point at which the system Jacobian becomes singular.

b) **References in alphabetical order**. With this variant, you assign each source a reference number that identifies it in the alphabetised list of references at the end.

The Name-and-Year System

In this system a source is acknowledged by writing in parentheses the name of the author and the year in which the work you refer to was published.

Suppression can be defined as "the process or technique of reducing electrical interference to acceptable levels or to situations leaving no adverse effect". (White, 1988)

There are some special cases you need to consider:

• if an author's name is already mentioned in the sentence, place only the year of publication between parentheses:

As Walter Johnson points out, "the transmission of electrical energy by wires, the broadcasting of radio signals, and the phenomenon of visible light are all examples of the propagation of electromagnetic energy". (1988)

• if you cite two or more works published by the same author in the same year, assign a letter after the year of publication − (1999a), (1999b) − to inform the reader of exactly which source you have referred to.

11.4.2. Conventions for Writing a Bibliography

As can be seen from the synthetic table below, there are some slight differences in the conventions used, corresponding to the in-text citation system used.

In-Text Citation System	Entries	Spacing	Sequence of Items	
			Books	Periodicals
Number Systems	order of first mention alphabetical order	• start at left margin • double spacing between items 2nd line - aligned beneath the 1st letter of the author's last name 2nd line-indented 5 spaces	• number • author's name • title of book • publication information	• number • author's name • title of article • journal name • publication information
Name-and-Year System	alphabetical order	• start at left margin • double spacing between items • 2nd line-indented 3 spaces	• author's name • title of book • publication information	• author's name • title of article • journal name • publication information

The differences are not significant and refer to whether the entries are numbered or not and to the style (indented or block style).

There are certain differences in the convention of style regarding the sequencing of items in a bibliography, depending on the field of study: humanities, social sciences, business disciplines, sciences. Let us now have a closer look at the typical conventions for book and article entries in the field of science and technology:

Book Entries	Article Entries
• **Number:** number the entry in case you are following a number system. Place a period after the number.	• **Number:** number the entry in case you are following a number system. Place a period after the number.
• **Author's name:** begin with last name, followed by a comma and the initials of the first and middle names.	• **Author's name:** begin with last name, followed by a comma and the initials of the first and middle names.
• **Title of book:** in the field of science, there are two main conventions for book titles, i.e. a) *title* in italics or underlined b) unmarked title Capitalise the first letter of the first word. End the title with a period.	• **Title of the article:** in the field of science, there are two main conventions for titles of articles, i.e. a) title of article between quotation marks b) unmarked title Capitalise the first letter of the first word.

• **Publication information:** write the city of publication. Place a colon. Write the name of the publisher. Place a comma/ semicolon. Give the year of publication. End with a period.	• **Journal name:** there are two main styles for writing the journal name, corresponding to the two conventions for writing the title of an article: a) when the title is placed between quotation marks, the journal *name* is usually in italics and given in full b) when the title of the article is unmarked, the journal name is also unmarked and is abbreviated (e.g. IEEE trans. on pow. syst.) • **Publication Information:** write the volume number. Place a comma. Write the page number. Place either a comma or a semicolon. Write the year of publication.

Illustration

Books
a) 1. Floyd, Th.L. *Electronic devices*, New York: Macmillan, 1988.

or
b) 1. Floyd, Th.L. Electronic devices, New York: Macmillan, 1988.

Periodicals
a) 1. Chiang, H.D.; Jean-Jumeau, R. "Toward a practical performance index for predicting voltage collapse in electric power systems" *IEEE Transactions on power systems.* Vol. 10, 584-588, May 1995.

or

b) 1. Chiang, H.D.; Jean-Jumeau, R. Toward a practical performance index for predicting voltage collapse in electric power systems. IEEE Trans. on pow. syst. Vol. 10, 584-588, May 1995.

11.5. Summary

This unit focused on the writing of research reports. We began by outlining the basic framework of a research report: *preliminaries, introduction, main body, conclusion* and *extras*, each including several sections. We then analysed in more detail the *introduction* − its main subsections and their communicative function. The last part of the unit was devoted to *quotations* and *references*. Suggestions were offered on how to quote if you want to *add, replace* or *omit* something in the original text. Conventions of style for *in-text quotations* and *reference lists* used in the scientific field were discussed and exemplified.

11.6. Keywords

acknowledgements   name-and-year system
block quotation   number system
dissertation   reference ; ~ in order of first mention; ~ in
ellipsis   alphabetical order
extras   research report
in-text citation

11.7. Activities

1. *Read this introductory section taken from a research paper.*

Evaluation of Pulling Rope Wear and Coefficient of Friction for Pipe-Type Cables

E.C. Bascam III, J.R. Stewart, L.Y. Tang

Introduction

The normal installation of pipe-type cables requires using a steel line, called a pulling rope, to pull the three cables simultaneously into a steel pipe. Calculations are performed prior to cable expected maximum pulling tensions. Careful attention to the coefficient of friction (COF) for the cable-to-pipe contact location

has been considered so that the damage to the cable conductor from excessive pulling forces can be avoided. Research has been conducted on COF of pipe-type cables to allow cable pulls of maximum possible length without damage to the cable [1]. Previously published data indicate COF values of 0.10 to 0.12 with stainless steel materials and 0.17 to 0.24 with bronze and zinc alloy skid wires [2].

However, utilities seldom consider the component of pulling force which results from friction between the pulling rope and cable pipe. On occasion the additional friction force from the pulling rope can result in excessive overall force experienced during a pull, especially for a long pulling length, including multiple bends. The pulling force from the rope-to-pipe contact can vary with rope and pipe wear, and these are a function of the pulling tension during the pull.

Lack of available information on pulling rope COF was the basis for the present study to determine the actual COF which might be observed in field conditions. Using data developed in the course of these tests, the utility can apply the COF from the pulling rope during pulling tension calculations using standard techniques.

Is its structure similar or different from the one presented in this unit? Can you identify the four main parts spoken about:
• introducing field and topic
• summarising previous research
• preparing for present research
• introducing present research

Are the parts you found in this order or not? Can you identify the subcomponents?

2. *Imagine you need to write a research report on* **SMD (Surface Mountable Devices).** *Go to the library and do some library research: consult sources and compile a working bibliography on* **card files**, *using the models offered in this unit.*

12 **WRITING A CV**

Writing a good CV is essential if you are applying for a (new) job, for a promotion in your institution/company or for a course of study**.**

But what information should be included in a CV? Which are the characteristics of an effective CV? This chapter will try to provide some answers, while also offering you some tips on how to write a CV suited to your needs.

12.1. Some Dos and Don'ts

Here are some tips on what you should / shouldn't do when writing your CV. In each pair, one assumption is correct, the other one is false. Underline the form of the verb which corresponds to the real tip and cross the other one out. One has been done for you.
 1. Your CV should/<u>shouldn't</u> be handwritten**.**
 2. A CV should / shouldn't be short**.**
 3. A CV should/shouldn't have a clear layout**.**
 4. Abbreviations should/shouldn't be used**.**
 5. Work experience should/shouldn't be listed in reverse chronology**.**
 6. Your CV should / shouldn't be adapted to the job you are applying for**.**
 7. You can / cannot lie about your qualifications**.**
 8. You should / shouldn't include information that may show you in a negative light**.**
 9. You should / shouldn't include all your hobbies**.**
10. You should / shouldn't use the pronoun *I* a lot**.**
11. You should / shouldn't use brightly coloured paper**.**

Now read the following text to check your answers. If you find other *dos* and *don'ts*, add them to your list.

The Perfect Graduate CV

Your CV is the one thing you must get right. A badly laid-out CV, or one that gives a prospective employer the wrong impression, could jeopardise your chances of reaching the interview stage, let alone getting the job.

A handwritten CV is unacceptable, typed is better and one composed on a word processor is best. Remember, keep is short! Busy employers do not have the time to read a rambling narrative, and won't be impressed by one. They want facts: qualifications, skills and experience – and should be able to see at a glance exactly what you have to offer them.

A good CV should run to no more than two pages of A4. This applies right the way up to senior management level – so those with far less experience (that means you, graduates!) should limit themselves to a single page.

The layout should be clear and easy on the eye. Leave wide margins on either side of the page. Use bold type for headings and bullet points for noteworthy achievements.

Unless you have some truly amazing and relevant experience, perhaps from a placement, it's generally best to lead with your education. Place it in chronological order, and don't use abbreviations. Writing down "Eng. Lit" instead of "English Literature", for example, will look sloppy.

You should always list any work experience in reverse chronology, i.e. putting the most recent position first. If you have achieved anything noteworthy at work, or had some responsibility, say so.

Think your CV as something organic which evolves and changes; is isn't a tablet of stone. Tailor it to the needs of the job. For instance, the fact that you once had a summer job at The Body Shop may be of minor interest if you're applying for a position with the local authority. But if you go for a vacancy at Marks & Spencer's head office, make sure your retailing experience is given prominence as it might tip the balance in your favour.

However, be warned: adaptability is not a byword for dishonesty. Rewriting your CV when applying for different jobs is a good thing. Lying about your qualifications and experience is not.

Avoid including information that shows you in a negative light. If your A-level grades were lacklustre, don't put them in. Just list the subjects you *passed*. Employers can find out any negative things about at the interview; but by then you'll be able to defend yourself, or at least show the issues in a more positive light. Think of your CV as a tool to get you an interview, and the interview as the tool to get you a job.

Exclude information about your marital status, career objectives, salary requirements and references. All of these, with the exception (one hopes) of the first, are topics to be discussed at the interview.

Do not send a photograph of yourself, or write down every hobby or interest you've ever had. It's better to list a small selection – remembering that the employer will form a mental picture of you largely on the basis of that selection – and give prominence to skills such as fluency in a foreign language or proficiency with computer packages. Your writing style will tell the recipient a lot about you. Avoid using the pronoun "I" – it's your CV so it's taken for granted that you are referring to yourself. Instead, begin sentences with positive, active words like "achieved", "directed" and "supervised".

Check the accuracy of everything in your CV, then ask someone to check it again. Use good quality notepaper, not brightly coloured paper.

Robert Gray

Several characteristics derive from here:
• there is no standard/all purpose CV, although there are patterns of organisation that you can follow;
• adapt your CV to the needs of the job. Have some variants each adapted to the job opportunities that are being offered;

• your CV should evolve with time: the CV you write as an undergraduate student will be different from a CV you write after 10 years of work experience;

• a CV is both a summing up of the stages you have already covered in your professional development and a prelude to the next stage: the interview.

12.2. Information Included in a CV

Decide which of the following items are generally included in a CV. Place a tick (√) in the appropriate box: Y = Yes ; N = No; S = (sometimes)

		Y	N	S
1. The grades you received in your school-leaving examination.	1			
2. Your current salary.	2			
3. Your name, address and telephone number.	3			
4. List of relevant past and present jobs and positions	4			
5. Date and place of birth	5			
6. Your hobbies and interests	6			
7. When you are available for an interview	7			
8. The languages you can speak, read or write	8			
9. Your computer literacy	9			
10. Details about your education	10			
11. Your suitability for the job advertised	11			
12. List of training courses you have attended	12			
13. List of professional diplomas or degrees you have gained	13			
14. Your reasons for applying for this job	14			
15. The name of the job / position you are applying for	15			

Here are two CV's written by two undergraduates students. Which do you prefer and why? Think of:
1. Layout
2. Headings
3. Content
4. Language (formal / informal)
5. Accuracy

Curriculum Vitae

Name   MARCEL COTIUGĂ

Address   Unirii nr.8, Focşani

Telephone: -home: 037 213457

                           -cell: 091 430 497

Date of Birth   June 9, 1997

Marital Status   Single

Education   2004 to 2008 Primary School no 9

                       in Focşani

               2008 to 2012 Secondary School No 9 in

                       Focşani

            2012 to 2016 "AL.I.CUZA" National College

           - major studies in Mathematics and Physics

           - participation in activities such as: football,

                       basketball

          2016 I passed the school-leaving examination

                with good marks in Romanian,

         Mathematics and Physics

         2016 I passed the entrance examination at

          "Gh.Asachi" Technical University in Iaşi

Special

Qualifications   Driving license (for 1 year)

          Fluent languages Romanian, English, German

         Knowledge of Informatics, Electronics

Personal

Abilities   Creative, Enthusiast, Optimistic,

        Communicative person

Interests   Electronics, Computers, Business, Travelling,

           Sports

References   Available on request

CURRICULUM VITAE

PERSONAL DETAILS:
Name: IOANA MARINA PAVEL
Address: Str. Bradului Nr. 10, Bl. A13, Iaşi cod 6600
Telephone: 0232 422 489
Date of Birth: 22 September 1995
Languages: Conversational English, German
Computer Literacy: Borland C, C++, Spice, Pascal

EDUCATION:
2002-2006   Primary School No. 34 Iaşi
2006-2010   Secondary School No. 37 Iaşi
2010-2014   Textile High School Iaşi
2014   Baccalaureate examination:
                         Romanian, Mathematics, Physics, History
2014 to date   "Gh.Asachi" Technical University
                         Faculty of Electronics and Telecommunications

QUALIFICATIONS: hairdresser, financial counsellor, PC-operator

INTERESTS: design, computers, foreign languages,
                         psychology, painting

REFERENCES: Available on request

As can be seen from the CV's presented above, the headings generally refer to:

• *PERSONAL DETAILS*
     Name
     Address (in Romanian)
     Telephone
     Date of birth

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Nationality (when you apply for a scholarship abroad)
Languages
Computer skills
Driving Licence (specify category)
- *EDUCATION* (in chronological order)

  period...   name of school

  period...   name of university, major field of study

  Degree
- *WORK HISTORY* (in reverse chronology)

  period   name of company, position
- *INTERESTS* (only those connected to the job you are applying for)
- *REFERENCES* (use the phrase 'Available on request') and enclose them if needed

There are certain variations to this basic pattern: for example, some personal details can appear immediately below your name, without being accompanied by headings/rubrics, e.g.

Ioana Marina Pavel
Str. Bradului nr. 10, Bl. A13
IAŞI 6600
tel. 0232 224 897

We shall now analyse in more detail the most important sections in a CV from the point of view of **terminology used**, **function** and **informational content**.

12.2.1. Education
Variations in Heading Terminology

The general heading is *Education*. Other possible headings for this section are:

- *Education and Training* (where the job you have presupposes some kind of practical training − pedagogical training, computer programming courses, secretarial training)

- *Education and Qualifications* (when you include in this section the degrees you have gained)

Function
     This section has the purpose of giving the future employer a clear idea about your education background.

Writing Tips
     The table below presents some tips which can help you to write in an efficient manner about your educational background. The tips are differentiated according to age and level of professional experience.

You are an undergraduate student	You have just graduated	You have some professional experience
• *Education* is the most important section in your CV • *Sequence of items*: chronological order, e.g. • high school education • baccalaureate diploma • university education - field of study - major subjects (optional) - grade average - grades (only the high ones) - your ranking	• *Education* is still the most important section in your CV • *Sequence of items*: chronological order, e.g. • high school education • baccalaureate diploma • university education - field of study - degree - final ranking (if high) - information on end-of-studies-project (paper)	• *Education* is no longer the main point of interest • *Sequence of items*: chronological order, e.g. • baccalaureate diploma (optional) • university education - field of study - degree - other degrees (e.g. PhD)

To sum up, the more professional experience you have, the shorter the rubric on background education. This is only natural, since the main focus shifts from education on to professional experience.

---

*Are the following **Education** sections written by: a) an undergraduate student?; b) someone who has just graduated?; c) someone who has professional experience? Match the numbers (1-3) with the corresponding letters (a-c).*

1.

June 2012	Baccalaureate with honours
2012-2016	"Gh.Asachi" Technical University Iaşi
	Faculty of Electrical Engineering
2016	Degree in Electrical Engineering
	Graduated first out of a class of 143
	Wrote a 120 page report on magnetic levitation vehicles

2.

2010-2014	"Roman Vodă" High School Roman
June 2014	Baccalaureate examination: Mathematics
	Romanian
	English
	History
	Chemistry
2014 to date	"Gh. Asachi" Technical University Iaşi
	Faculty of Electronics and Telecommunications
	Subjects: Electronic Devices and Circuits
	Signals, Circuits and Systems
	Fundamentals of Electrical Engineering
	Ranked third in a class of 191

3.

1990-1995	"Gh.Asachi" Technical University - Iaşi	
	Faculty of Electronics and Telecommunications	
Degrees		
1995	Degree in radiocommunications	
1997	MEng in communications systems	
	"Gh.Asachi" Technical University Iaşi	
2001	Doctorate in electronics	
	"Gh.Asachi" Technical University Iaşi	

a	b	c

12.2.2. Work History
Variations in Heading Terminology
Other possible headings for this rubric:

- *Work*
- *Work Experience*
- *Employment History*

- *Experience* ⎤ these headings are generally used
     by certain professionals (e.g.
- *Professional Experience* ⎦ physicians, lawyers, architects)

- *Career History* ⎰ to be avoided by undergraduates or
     young graduates
     use this rubric if you have a rich
     professional experience

Some Subheadings
Related Activities - list related activities which are not part of
     your job description (e.g. consultant)
Summer Jobs - use this subheading in case such jobs have
     offered you the opportunity to get experience
     needed for the job you are applying for

Skills	- you can enlist the skills and qualifications you possess which are related to the position you are applying for
Achievements	- professional results you have obtained

Function

This section is extremely important. It will show your future employer what professional experience you have gained; on its basis, s/he will be able to evaluate and rank your professional potential.

The more professional experience you have, the longer the *Work History* rubric becomes.

Information Content

The information content of this section differs from one person to another. In the case of one and the same person, the information included in the *Work History* rubric will expand with time: whenever you get a promotion or you get another job in one and the same company or in another company, you need to present these changes in your CV. Therefore, remember to keep your *Work History* rubric updated.

We shall present here two formats:

• one that can be used by undergraduate students and/or by young graduates with less work experience;

• one that can be used by people who already have some work experience.

Less Work Experience	More Work Experience
WORK HISTORY	*WORK HISTORY*
• presentation of jobs (up to the present moment)	• presentation of jobs (up to the present moment) and responsibilities
reverse chronology latest job	**reverse chronology** latest job
first job **period, name of company, job** • *Summer Jobs* (if any) presentation of summer jobs **period, name of company, job** • *College Positions* presentation of college positions (e.g. student associations) **activity description**	first job **period, name of company, job responsibilities** • *Achievements /* *Accomplishments* • **presentation of your** **professional achievements**

Illustration

Less Work Experience	
WORK HISTORY	
October 1998 - March 2000	ROMTELECOM Neamţ computer operator
March 2000 - to date	ELECOM Ltd. Bacău - software development engineer
Summer Jobs	
Summer 1998	ROMTELECOM Neamţ - phone operator
College Positions	
1996-1998	Student representative in the Professorial Council
1994-1998	Member in the administrative board of the Student's League
More Work Experience	
WORK EXPERIENCE	
1994 - to date	SOFTCOM Ltd Iaşi - Sales Manager
	• Responsible to Managing Director for Sales of specialised software
	• Manage and coordinate staff of 25 representatives and 10 office staff
	• Also responsible for budgeting, recruitment and training of staff
Achievements	• Increased sales through contracts with over 100 companies for the development of specialised scientific and technical software
	• Set up and trained sales teams to cover market outside Iaşi county
	• Expanded sales activities to other regions, leading to the creation of new sales branches

	• Increased company turnover

1990-1994	DATAPLUS Ltd Iaşi - Trainee Sales Engineer / Assistant Sales Manager
	• Responsible to Sales Manager for sales of technical software in Iaşi
Achievements	• Built up sales by over 150%
	• Researched and established new markets

Language

As far as **verbs** are concerned, two main tenses are used:

• **Past Tense** – whenever you refer to past jobs/positions or responsibilities, e.g.

my duties *included*

carried out	improved
coordinated	increased
conducted	organised
designed	tested
developed	participated in
evaluated	promoted
expanded	supervised

• **Present Tense** – when you refer to present job/position or responsibilities, e.g.

my duties *include*

currently ⎧ coordinate (you can choose other verbs in the **present** ⎨ develop that describe your activity) ⎩ evaluate

• Use an **elliptic style**:

- omit the pronoun *I*, e.g.

as Managing Director, ⎧ increased sales by 50% ⎨ established new markets

- omit the verbs *have* and *be,* e.g.

while functioning as trainee sales engineer, researched and established new markets

- omit articles, e.g.

performed same functions as Assistant Manager

12.2.3. Other Rubrics

In what follows, we shall present some tips on how to write other sections of your CV.

Languages

This rubric may be part of the *Personal Details* section or may appear as a separate section, placed before the *Interests*.

The adjectives generally used to describe your foreign language proficiency are:

- **Conversational**, in case you possess oral communication skills at a lower-intermediate level (you can understand and can make yourself understood)
- **Fluent**, in case you possess both oral and written communication skills at an upper intermediate level

Illustration

| *Languages* | Conversational German |
| | Fluent English |

Other possible options:

- Excellent – in case your level of proficiency approaches that of a native speaker (e.g. when you have a degree in foreign languages)
- Good written and oral skills
- Good knowledge of German
- Working knowledge of Italian and Spanish
- Reading knowledge of French

Computer Literacy

Just like the *Language* rubric, this one can appear at the beginning, as part of the *Personal Details* or towards the end of your CV, as a separate section.

You should enlist here the **computer programmes** you are familiar with, as well as your **computer skills**.

Illustration

Computer literacy   Word Perfect, Word, Windows 9x, Excel, FoxPro
Programming experience in UNIX
Experience with relational databases

Both the *Languages* and *Computer Literacy* rubrics are very important: all the other skills and qualifications being equal, the foreign language proficiency and computer literacy can decide who gets the job. Moreover, in addition to specialist knowledge and experience in a particular field of activity, most job advertisements include among their requirements foreign language proficiency and computer skills.

If you apply for a job or a promotion in the academic field, you should also include in your CV other entries, such as:

Associations, Memberships, Professional Affiliations
Honours, Awards

The entry *Publications* will not normally appear in your CV. The list of publications forms a separate document.

Interests

Enlist in this rubric only those interests and hobbies that are related to the job you are applying for.

References

The references are normally enclosed with other documents, i.e. they are not normally included in your CV. In order to point out that you **do** have references, and they can be shown if necessary, use the following pattern:

References   Available on request

12.3. Summary

The last unit left the scientific field (as well as the academic setting) in order to help you make the first steps in the real world. The real world means first of all getting a job. In order to get a job you need to apply for a job. In order to apply for a job, you need to write a Curriculum Vitae. Think of your CV as the first essential step in getting a job. Consequently,

- devise a reader-friendly CV - clear layout
  - clear and concise style
  - well-constructed rubrics
- include information that presents you in a positive light
- avoid using '*I* '
- edit your CV carefully to make sure there are no spelling, punctuation or grammar mistakes
- prepare several versions of your CV if you apply for different jobs
- remember that your CV should evolve with time, just like your experience

12.4. Keywords

achievements	education
awards	employment history
baccalaureate / ~ with honours	interests
career history	references
computer literacy	reverse chronology
curriculum vitae (CV)	work history / ~ experience

12.5. Activities
1. *Read the job advertisement below.*

Software Development Engineer
(ref. MND-DDE)
Maintains and optimizes tools used for monitoring the mobile networks performance
- Experience with relational databases
- Programming experience in C (Unix)
- Programming experience in Java or Tcl/Tk is a plus

If you are selected, you will be part of a highly qualified and motivated team, working in a flexible, dynamic, international environment, with great opportunities for professional development. You will get an attractive salary, housing loans, medical care and restaurant tickets

Send your CV to:

Alcatel Network Systems Romania   Tel. 056-303100
Human Resources Department   Fax 056-194606
Str. Gh. Lazăr Nr. 9, Timişoara

Requirements for the job:
- Technical University student / graduate
- Good knowledge of English

Here are the CV's of two students who have already applied for this job. Who do you think has more chances of being invited to an interview and why?

CURRICULUM VITAE

PERSONAL DETAILS
Name: **ANCA MIRONESCU**
Address: Str. Smirodava, bl. 5, ap. 15
                   Roman, jud. Neamţ 5550
Telephone: (0040) 337 253 194
Date of Birth: 29 October 1976
Nationality: Romanian
Languages: Conversational French
                   Fluent English
Computer Literacy: Borland C, C++, Pascal

EDUCATION
1983-1991:   "Mihai Eminescu" School No. 5, Roman
1991-1995:   Theoretical High School "Roman Vodă"
1995:   Baccalaureate examination - Math*ematics*
                                              - Romanian
                                              - English
                                              - History
                                              - Chemistry
1995-2000   "Gheorghe Asachi" Technical University
                   Faculty of Electronics and
                   Telecommunications
                   Degree in Telecommunications
                   Ranked 2nd out of 122
2000 to date   Computer operator ROMTELECOM Neamţ

INTERESTS: computers, travel, reading

REFERENCES: Available on request

CURRICULUM VITAE

PERSONAL DETAILS

Name: VLAD TOMESCU
Address: Str. Apelor, No. 3, cod 6600, Iaşi
Telephone: 0232 211 784
Date of birth: November 25th, 1997
Nationality: Romanian
Driving licence: cat. B
Languages: Fluent English
Computer literacy: Word Perfect, Word, Windows 9x, Excel, FoxPro

EDUCATION

2016   Graduated from Negruzzi High School, Iaşi
Student at the Faculty of Electronics and Telecommunications

INTERESTS

communications, theatre, cinema and bodybuilding

REFERENCES

Available on request

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2. *Suppose you apply for this job. Follow the organisational patterns presented in this unit, bear in mind the tips given and write your own CV. Make it efficient.*

Knowledge of Audience
General Questions (regardless of purpose)

• Who is the reader? What is the reader's age, sex, occupation, educational background, religious background and ethnic heritage?
• What is my relationship with the reader?
• Why will the reader be interested in my paper/report/essay/CV ? How can I best spark the reader's interest?
• What impact on my presentation (content, language, tone) will the reader have?

Informative Writing (the questions above, as well as the following)
• What does the reader know about the topic?
• What does the reader need or want to know?
• What level of language and content shall I use, given the reader's knowledge and understanding?

Persuasive Writing (the two sets of questions above, as well as the following)
• What are the reader's views on the topic? Is the reader likely to agree with my view on the topic? to disagree? to be neutral?
• What factors (occupation, age, sex, religious conviction) are likely to affect the reader's beliefs on the topic?
• How can I shape my argument to encourage the readers' support, given their level of interest, level of knowledge and understanding and their beliefs?

Transitions (Connectives) and Referring Words

Addition / Reinforcement		**Alternation**	**Negative**
and	both...and	or	nor
above all	furthermore	either ... or	neither
additionally	in addition	neither ... nor	not
again	moreover		
also	too		
besides			

Similarity	**Contrast**	**Concession**
also	but	al(though)
in the same way	conversely	anyhow
likewise	in contrast	anyway
similarly	instead	else
	on the contrary	even if
	on the one hand	even though
	on the other hand	however
	otherwise	in spite of
	whereas	nevertheless
	while	still
		yet

Reason / Cause	**Result / Effect**	**Purpose**
as	accordingly	in order to
because	as a consequence	to
due to	as a result	in order that
owing to	consequently	so that
since	hence	
	so	
	therefore	
	thus	

Space	Time	Sequence
above	afterwards	first(ly)
below	at last	second(ly)
here	before	third(ly)
nearly	during	next
next to	eventually	then
there	later	finally
	now	
	subsequently	
	then	

Introduction	Conclusion / Summary	Including	Excluding
to begin with	in conclusion	along with	apart from
to start with	in summary	apart from	except
	in the end	as well as	except for
	on the whole	together with	
	to conclude		
	to summarise		
	to sum up		

Exemplifying	Emphasising	Referring back	Referring forward
for example	even	the former	at the end
for instance	indeed	the latter	in the next
namely	in fact	as (I) mentioned	paragraph/section
to illustrate	of course	above/before/earlier	/chapter
		as (I) said earlier	later
		at the beginning	see below
		see above	the following

Checklist for Writing Effective Sentences

• Have you been precise?

• Have you been concise?

• Have you used parallel structures to achieve balance and coherence?

• Have you used different sentence openings to add variety and avoid monotony?

• Have you used vivid and concrete language?

• Have you avoided sexist language?

• Have you created common ground with the reader?

• Have you used an appropriate and consistent tone?

Checklist for Avoiding Common Grammar Errors

• Have you avoided shifts in person, number and tense?

• Have you avoided incomplete sentences?

• Have you used tenses correctly?

• Have you checked tense endings?

• Have you used tenses consistently?

• Have you maintained agreement between subjects and verbs?

• Have you maintained agreement between pronouns and their antecedents?

• Have you used pronouns correctly?

• Have you placed adjectives and adverbs correctly?

Checklist for Punctuation

• Have you used a period, a question mark or an exclamation point to end sentences?

• Have you used a comma after an introducing subordinate clause?

• Have you used a comma both *before* and *after* an apposition placed in the middle of a sentence?

• Have you checked for correct use of the apostrophe and quotation marks?

• Have you used a colon after a complete sentence?

• Have you used semicolons to separate grammatically equal elements?

• Have you used hyphens correctly?

• Have you used capitals and abbreviations correctly?

Punctuation

1. **Full-stop (period)** / **.** /

Used - at the end of a sentence. The next sentence begins with a capital letter.

- after an abbreviation: Mr., Mrs., Dr.

Not used with acronyms: CAD, CAM, LCD, VCR

Placed inside quotation marks that end a sentence

e.g. "No one is certain how and why VR affects us and what its effects are, so nobody is certain what tests to do."

2. **Question Mark** / **?** /

Used after a direct question

Not used in indirect questions

e.g. He asked what experiment we should carry out.

Placed inside quotation marks

e.g. He asked me: "What experiment should we carry out?"

3. **Exclamation Mark** / **!** /

Used - after real exclamations: My goodness!

- sometimes after short commands: Stand up!

Not normally used in academic writing.

4. **Comma** / **,** /

Used - to separate parts of the sentence

- to separate some connectives from the rest of the sentence:

actually, however, of course, nevertheless

e.g. Actually, we have never imagined this could be done.

- in lists or enumerations

e.g. We need a voltmeter, an ammeter, a cell, a resistor and a Zener diode.

- to separate an apposition from the rest of the sentence

  e.g. Isaac Asimov, the well known SF writer, established the three rules of robotics.

- when a subordinate clause comes before the main clause

  e.g. If we have time, we shall carry out another experiment

- to separate a non-defining relative clause (i.e. a relative clause that contains nonessential additional information)

  e.g. The experiment, which was carried out yesterday morning, proved to be a success.

5. **Colon** / **:** /

    Used   - after a complete sentence to indicate a close interdependence between the units it separates

            - to introduce a list of items. It is often preceded by *namely, such as, as follows*

              e.g. The paper was marked according to the following criteria: layout, content, fluency and accuracy.

            - to introduce an explanation

              e.g. I'll tell you what I mean by *brainstorming*: this is a technique for generating ideas in a non-judgemental manner.

6. **Semi-colon** / **;** /

    Used   - to link two closely related clauses or sentences

              e.g. The lecture was far too long; it was also very boring.

            - to separate subgroups in a list

              e.g. A CV should be: clear, concise, precise; attractive, punchy, well laid out; printed on a computer or at least typed.

7. **Dash** / – /
    Used   in informal situations to set off and emphasise a statement added to a complete sentence
                e.g. He started driving – he had been studying all night – and nearly fell asleep.

8. **Hyphen** / - /
    Used   - to join compound words
            e.g. short-circuit
          - to separate, in certain cases, the prefix from the rest of the word
            e.g. co-operative

9. **Apostrophe** / ' /
    Used   - to indicate possessive genitive
            e.g. John's dissertation
          - in contractions (formal waiting **does not** use contracted forms)
          - with certain plurals
            e.g.   - letters: *dot your i's*
                    - numbers: *four 3's*

10. **Parentheses ( )**
    Used   - to set off nonessential information: comments, examples, appositions
            e.g. Robots can be used to perform difficult or dangerous jobs(for example to work under the sea).
          - to set off translations of foreign words
            e.g. The word 'robot' comes from the Czech *robota* (work).
          - to set off acronyms
            e.g. The traditional artificial intelligence (AI) approach has attempted to program a robot with sets of rules and knowledge about the world in which it lives.

- for some periods of time (date of birth and death) in formal writing

  e.g. Thomas Edison (1847-1931), experimenting with the carbon filament he had invented, made another important finding.
- for cross - references
  e.g.   As mentioned above (see 2.5.7), the automotive industry has already used robotic lines for the past twenty years or so.
  - to set off numbers or letters that mark items in a series, when this series is run in with a sentence
  e.g. What you need to do this term is to: (1) start studying for your exams and (2) stop thinking about the past.

11. **Brackets** [ ]
    Used   - to clarify or insert a reference into quoted material
    e.g. [The ocean held] all the stories that had ever been told and many that were still in the process of being invented...
    - to show your awareness of an error in the quoted passage
    e.g. "Several researches found that after spending 10 minutes in a stereoscopic virtual environment, people experienced problems such as blurred vision, eye strain and even double vision, but weather [sic] VR can cause damage to the brain is not sure."

12. **Quotation marks (inverted commas)** can be single ' ' or double " "
    Used   - to enclose the actual words of direct speech

e.g. He said: "Why haven't you finished the report?"
- to set off short quotations

e.g. Erik Virre of the Human Interface Technology Laboratory (HITL)compares VR to getting a new pair of glasses: "When we change glasses to a new magnification, or switch between glasses and contact lenses, the scene is not what the eye is expecting."

13. **Ellipsis** / **...** /
  Used - to show that words or entire sentences have been deleted from a quoted passage

     e.g. The only way out is to find a way to simplify the data, ... while leaving out the irrelevant detail.

14. **The Slash**: **/**
  Used - to separate lines of poetry run with the text of a sentence
     - to show choice
    e.g. either/or, s/he.
     - to write fractions
    e.g. 1/2 , 3/4

Mechanics

Italics

Rendered with a slanted type, e.g. *italics*.
  Used - to identify key terms or numerals that will be further referred to

     e.g. The distinctions between *summary* and *paraphrase* will be discussed in the next chapter.
    - to identify foreign words or expressions
     'Viz.' comes from the Latin *videlicet* (namely).

- in bibliographical conventions. Both in text and in reference listing, italics designate titles for:
  - books, plays, long poems
  - newspapers, magazines, journals
  - movies, TV shows, works of art
  - individually named transport craft: ships, trains, planes

Capital Letters

Used
- at the beginning of sentences
- in titles (of books, plays, works of art) - for the important words
- names of people
- nationalities and adjectives derived from names of countries
- places (including those in addresses) and regions
- titles of people, honorifics
  e.g. Ms. Brown, Professor Jones.
- names of institutions / companies
- geographical names
- brand-name products
- abbreviations for words that are capitalised
  e.g. R.S.V.P., B.S., M.S.
- acronyms
  e.g. CIA, FBI.

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