

UNIVERSITY OF CONSTANTINE 1
Module T.C.E (Technical communication and expression)

- **(T.C.E):** Technical communication and expression : (technique de communication et d'expression)
- **Methodology Of Scientific Work :** Méthodologie Du Travail Scientifique
- **The methodology** is an approach adopted by researchers, linguists, publishers and teachers to perform a method. (Une méthodologie est une démarche adoptée par les chercheurs, les linguistes, les éditeurs et les enseignants pour effectuer une méthode).
- **Scientific research** (la recherche scientifique): it is a scientific study (étude scientifique)
- **The research request:** (La recherche demande)
 - An effort; (un effort)
 - Time; (du temps)
 - Continuity (the recherche it is never completed). (La continuité, La recherche n'est jamais achevée).
- **Plagiarism :** Plagiarism is the appropriation of the words or ideas of someone else and present it as his own (Le plagiat consiste à s'approprier les mots ou les idées de quelqu'un d'autre et de les présenter comme siens)
- **The bad time management:** La mauvaise gestion du temps
- **The consequences of the bad time management is :** (les conséquences de la mauvaise gestion du temps) :
 - **Anxiety;** (Angoisse)
 - **Overwork;** (Surmenage)
 - **Stresse;** (Stresse)
- **The weekly schedule must be (Le planning hebdomadaire doit être):**
 - **Custom :** (Personnalisé)
 - **Diversified :** (Diversifié)
 - **Balanced :** (Équilibré)
 - **Flexible :** (Souple)
 - **Realistic :** (Réaliste)
 - **Controllable:** (Contrôlable)

- **Risks of chemicals products on health** (Risques des produits chimique sur la santé) : we have three levels (nous avons trois niveaux) :

- **Digestive Level**: by mouth pipetting. (Niveau digestif : par pipetage à la bouche.
- **Lung Level**: inhalation of toxic gases and solvents. (Niveau pulmonaire : inhalation de gaz toxiques et solvants)
- **Skin Level**: by contact. (Niveau cutané : par contact)

- **Note taking or “Taking notes** (La prise de note) : is to write the essential information with maximum speed” (Prendre des notes consiste à écrire l’essentielle des informations avec un maximum de rapidité).

Sources of notes : (les sources de notes)

- 1) From the **oral**: courses, meeting ...; (orale)
- 2) From his own **mental** source: memory, thinking; (source mentale)
- 3) From direct **observation** of reality: phenomenon, experimentation ...; (observation)
- 4) From a written **documents**: magazines, books ... (l’écrit)

- **Conditions necessary for taking notes**: (Les conditions nécessaires de la prise de note): **the memory, the attention and concentration, organization and structure, and the economy.** (La mémorisation, de l’attention et la concentration, de l’organisation et la structuration, et de l’économie).

- **The three types of memory**: (les trois types de mémoire):

- Visual memory; (La mémoire visuelle)
- Auditory memory; (La mémoire auditive)
- Kinesthetic memory. (La mémoire kinesthésique)

- **The research report request** (Le rapport de recherche demande):

- The choice of the subject of work (Le choix du sujet de travail).
- Bibliographic research (La recherche des ouvrages bibliographiques).
- The practical realization of the project. (La réalisation pratique du projet).
- Drafting of the manuscript (memory). La rédaction du manuscrit (mémoire).
- The oral presentation. (L’exposé oral).

- The written statement (or memory) performed using the software tool, it must contain the following elements: (L'exposé écrit (ou le mémoire), réalisé à l'aide de l'outil informatique, doit contenir les éléments suivants:

- A title : Un titre (dans la page de garde) ;
- Acknowledgements; Les remerciements ;
- A table of contents; Une table de matière ;
- An introduction; Une introduction ;
- A chapter (or more) of bibliographic research; Un chapitre (ou plusieurs) : analyse bibliographique ;
- A chapter materials and methods; Un chapitre : matériel et méthodes ;
- A results chapter; Un chapitre résultats ;
- A discussion of the results; Une discussion des résultats ;
- A conclusion; Une conclusion ;
- A summary (and keywords); Un résumé (et mots clés);
- Annexes : Les annexes ;
- And a list of reference Bibliographic: Et une liste de références bibliographiques.

Module Responsible
Mme Boudjema S.

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- **Terminology** (Terminologie): a set of terms and vocabulary specialized for each science. (Un ensemble de termes et de vocabulaires spécialisés pour chaque science)
- **Biology** (La biologie): The science that studies the living organisms. (La science qui étudie les êtres vivants).
- **Laboratory** (Le laboratoire): is a local adapted for scientific research, biological analyzes, and observations ... (Un locale aménagé pour effectuer des recherches scientifiques, des analyses biologiques et des observations...)
- **Tissu**: (Un tissu): Is a collection of similar cells have the same origin and attending the same function. (Un ensemble de cellules semblables ayant la même origine et participant à la même fonction).
- **Cell** (La cellule): The smallest unit of the living world, capable of ensuring its survival and reproduction. (La plus petite unité du monde vivant, capable d'assurer sa survie et sa reproduction).
- **Histology** (L'histologie): The science that studies the tissues. (L'histologie: la science qui étudie les tissus).
- **Animal Herbivore** (Herbivore): Animal that feeds on grasses. (Animal qui se nourrit d'herbes, et de substances végétales).
- **Animal Carnivore** (Carnivore): Animal that feeds on flesh. (Animal qui se nourrit de chair)
- **Soil** (Le sol): Represents the surface layer, furniture, the earth's crust, resulting from the processing of rock, enriched with organic inputs. (Représente la couche superficielle, meuble, de la croûte [terrestre](#), résultant de la transformation de la [roche mère](#), enrichie par des apports [organiques](#))
- **Pedology** (La pédologie): The science that studies the soil. (La science qui étudie le sol).
- **Geology** (La géologie): The science that studies the earth. (La [science](#) qui étudie la terre).
- **Vegetation** (La végétation): all plants that grow in a given location. (L'ensemble des [plantes](#) qui poussent en un lieu donné).

- **Vegetal biology:** (La biologie végétale): The science that studies the world living vegetal. (La science qui étudie la végétation).
- **Parasitology** (La parasitologie) : The science that studies the parasites. (La science qui étudie les [parasites](#)).
- **Animal biology** (La biologie animale) : The science that studies the world living animal. (La science qui étudie le monde vivant animal).
- **Biophysics:** (La biophysique): The science that studies the physical interactions in a living cell. (La science qui étudie les interactions physiques au sein d'une cellule vivante).
- **Biochemistry:** (La biochimie): The science that studies the chemical reactions in a living cell. (La science qui étudie les réactions chimiques au sein d'une cellule vivante).
- **Microbiology:** (La microbiologie): The science that studies the microorganisms. (La science qui étudie les micro-organismes).
- **Immunology:** (L'immunologie): The science that studies the immune system. (La science qui étudie le système [immunitaire](#)).
- **Genetics:** (La génétique) : The science that studies the heredity and genes. (La science qui étudie l'hérédité et les gènes).
- **DNA (ADN):** Deoxyribonucleic acid; This molecule contains the genetic information. (Acide désoxyribonucléique ; Cette molécule contient l'information génétique).
- **RNA (ARN):** Ribonucleic acid. ([acide](#) [ribo](#)[nucléique](#)).
- **Mutation:** (Une mutation): A change in a gene in the DNA sequence that compose it. (Une modification d'un gène, donc de la séquence d'ADN qui le compose).
- **Nucleus:** (Le noyau): The cellular structure that contains and protects DNA. (La structure cellulaire qui contient et qui protège l'AND).
- **pH :** (Le pH) : hydrogen potential. (Le [potentiel](#) [hydrogène](#)).
- **Acid milieu :** $\text{pH} < 7$. (Un milieu acide : $\text{pH} < 7$)
- **Neutral milieu** $\text{pH} = 7$: (Un milieu neutre : $\text{pH} = 7$)
- **Basic milieu :** $\text{pH} > 7$. (Un milieu basique : $\text{pH} > 7$)

- **Eukaryotes:** (Eucaryotes): cells have a nucleus. (Cellules qui possèdent un noyau).
- **Prokaryotes:** (Procaryotes): cells which do not have a nucleus. (Cellules qui ne comportent pas de noyau).
- **Haploid:** (Haploïde): This adjective describes a cell formed by n chromosomes. (Cet adjectif qualifie une cellule formée par n chromosomes).
- **Diploid:** (Diploïde): This adjective describes a cell formed by $2n$ chromosomes. (Cet adjectif qualifie une cellule formée par $2n$ chromosomes).
- **Aerobic:** (Aérobie): Adjective that defines an environment with oxygen. (Adjectif qui définit un milieu avec oxygène).
- **Anaerobic:** (Anaérobie): Adjective that defines an environment that does not contain oxygen). (Adjectif qui définit un milieu sans oxygène).

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Writing a dissertation

Study guide

This Study Guide addresses the task of writing a dissertation. It aims to help you to feel confident in the construction of this extended piece of writing, and to support you in its successful completion.

You may also find the following Study Guides helpful:

- Planning and conducting a research project
- Planning essays
- Writing essays
- Thought mapping
- Referencing and bibliographies

Introduction

Sometimes writing is seen as an activity that happens after everything else:
“The research is going well, so the writing should be straightforward - I can leave it until later”.

“I know I’m not good at writing so I keep putting it off”.

“I know I’m good at writing so I can leave it to later”.

“I want to get everything sorted out in my mind before I start writing or I’ll just end up wasting my time re-writing”.

These four very different perspectives lead to the same potential problems:

- Regarding re-drafting as a failure or a waste of time;
- Ignoring the further learning and clarification of argument that usually occurs during the writing and re-writing process; and
- Leaving too little time for effective editing and final proofing.

The process of having to describe your study in detail, in a logical sequence of written words, will inevitably highlight where more thought is needed, and it may lead to new insight into connections, implications, rationale, relevance, and may lead to new ideas for further research.

Barras (1993:136) suggests that you ‘think of your report as part of your investigation, not as a duty to be undertaken when your work is otherwise complete’, and this Study Guide suggests that: **writing is an integral part of the research process.**

Getting on with the writing

The good news is that you have already started writing if you have written any of the following in relation to this study:

- A research proposal;
- A literature review;

- A report of any pilot studies that you undertook;
- An abstract for a conference;
- Reports for your supervisors;
- A learning journal where you keep ideas as they occur to you; or
- Notes for a presentation you have given.

In each case the object of the writing was to communicate to yourself, your supervisors, or to others, something about your work. In writing your dissertation you will draw on some of this earlier writing to produce a longer and more comprehensive account.

Check out what is required

Before embarking on any substantial writing for your dissertation you will need to check the exact requirements regarding:

- The word limit: maximum and minimum; and whether or not this includes words within tables, the abstract, the reference list, and the appendices;
- Which chapters are expected to be included, in which order, and what kind of material is expected in each;
- The kind of content appropriate to place in the appendices rather than in the main text; and
- The marking scheme or guidance.

The structure

There are some conventions that guide the structuring of dissertations in different disciplines. You should check departmental and course regulations.

Below are two structures that are commonly used.

- Title page
- Abstract
- Acknowledgements
- Contents page(s)
- Introduction
- Materials and methods **or** Literature review
- Results **or** Sources and methods
- Discussion **or** Findings
- Conclusions
- References
- Appendices

Each section or chapter has its own particular function

Title page

The title itself is an important opportunity to tell the potential reader what your research is about. You will need it to be succinct, specific, descriptive, and representative of the research you have done. There is likely to be a required format for the title page in your discipline, so you need to check what that is.

Abstract

This may be one of the shortest sections of your thesis or dissertation, but it is worthwhile taking great care to write it well. Essentially, the Abstract is a succinct summary of the research. It should be able to stand alone in representing why and how you did what you did, and what the results and implications are. It is often only one page long, and there may be a word limit to adhere to. The Abstract is an important element of the thesis, and will become a document in its own right if the thesis is registered within any database. The examiners will therefore assess your Abstract both as part of your thesis, and as a potentially independent document.

It can be best to write the Abstract last, once you are sure what exactly you are summarising. Alternatively it can be useful to write the abstract earlier on, as an aid to identifying the crucial main thread of your research, its purpose, and its findings, which could then guide the structure of the dissertation.

Attending to the very restrictive word / space limit, while at the same including all the relevant material is quite a challenge. It might be useful to look at how others have managed. It is certainly an academic exercise, but perhaps not too different from the concise explanations of your research you may have had to give to relatives and neighbours over the last few years, in terms of its brevity, accessibility, and comprehensiveness.

Acknowledgements

This is your opportunity to mention individuals who have been particularly helpful. Reading the acknowledgements in other dissertations in your field will give you an idea of the ways in which different kinds of help have been appreciated and mentioned.

Contents, and figure and table lists

The contents pages will show up the structure of the dissertation. Any imbalance in space devoted to different sections of content will become apparent. This is a useful check on whether amalgamation of sections, or creation of further sections or sub-sections is needed.

Introduction

Although this is the first piece of writing the reader comes to, it is often best to leave its preparation to last as, until then, you will not be absolutely sure what you are introducing. The introduction has two main roles:

- To expand the material summarised in the abstract, and
- To signpost the content of the rest of the dissertation.

The literature review, or context of the study

The purpose of this chapter is to show that you are aware of where your own piece of research fits into the overall context of research in your field. To do this you need to:

- Describe the current state of research in your defined area;
- Consider whether there are any closely related areas that you also need to refer to;

- Identify a gap where you argue that further research is needed; and
- Explain how you plan to attend to that particular research gap.

This can lead logically into a clear statement of the research question(s) or problem(s) you will be addressing.

In addition to the research context, there may be other relevant contexts to present for example:

- Theoretical context;
- Methodological context;
- Practice context; and
- Political context.

It can be difficult to identify the best order for sections in this chapter because the rationale for your choice of specific research question can be complicated, and there may be several inter-linked reasons why the research is needed. It is worth taking time to develop a logical structure as this will help to convince examiners of the relevance of your research, and that you understand its relevance. It will also provide you with a framework to refer back to in your discussion chapter, when you reflect on the extent to which your research has achieved what it set out to do.

Chapter(s) describing methods, sources, material etc

In these chapters a straightforward description is required of how you conducted the research. If you used particular equipment, processes, or materials, you will need to be clear and precise in how you describe them. You must give enough detail for another researcher to replicate your study.

Results / Findings

You will need to check which style of reporting is preferred in your field. For example a scientific dissertation would probably have very clear separation between the results and the discussion of those results; whereas a social science dissertation might have an overall chapter called Findings, bringing the results and their discussion together.

Decisions about style of presentation may need to be made about, for example:

- Whether you want to begin with an initial overview of the results, followed by the detail, or whether you move immediately into the detail of the results;
- In which order you will be presenting the detailed results; and
- What balance, in terms of word space, you want to achieve across the spread of results that you have.

Discussion

This is where you review your own research in relation to the wider context in which it is located. You can refer back to the rationale that you gave for your research in the literature review, and discuss what your own research has added in this context. It is important to show that you appreciate the limitations of your research, and how these may affect the validity or

usefulness of your findings. Given the acknowledged limitations, you can report on the implications of your findings for theory, research, and practice.

Conclusions

This chapter tends to be much shorter than the Discussion. It is not a mere ‘summary’ of your research, but needs to be ‘conclusions’ as to the main points that have emerged and what they mean for your field.

References

This section needs to be highly structured, and needs to include all of your references in the required referencing style. As you edit and rewrite your dissertation you will probably gain and lose references that you had in earlier versions. It is important therefore to check that all the references in your reference list are actually referenced within the text; and that all the references that appear in the text appear also in the reference list.

Appendices

You need to check whether or not the appendices count within the word limit for your dissertation. Items that can usefully go in the appendices are those that a reader would want to see, but which would take up too much space and disrupt the flow if placed within the main text. Again, make sure you reference the Appendices within the main text where necessary.

Designing your detailed structure

If your dissertation is well-structured, easy to follow, logical, and coherent, your examiners will probably enjoy reading it, and will be able to listen to your argument without the distraction of trying to make all the links themselves.

The only way to achieve a consistent argument throughout a piece of writing is by creating some kind of plan or map of what you want to say. It can be useful to think of the research question or topic going like a strong thread throughout the dissertation: linking all the elements of the study, and giving coherence to its reporting.

Moving from doing the research to writing a comprehensive account of it is not necessarily easy. You may feel that you know everything in your head but can’t see how you can put it into words in the most useful order. It can be helpful to break the task down into smaller, more easily accomplished elements. The process of producing your writing plan could go as follows.

1. You could start by making a comprehensive and unstructured list of all the elements and ideas that you need to include, ranging from
2. Chapter headings to notes about analysis, and from ideas for graphical representation to ideas for further research. Alternatively you could choose to start at stage 2.
3. List the main chapter headings in the order in which they will appear.
4. Under each chapter heading, list a series of important sub-headings. It may be that, for example, a literature review chapter needs to be split into a review of several different

segments of literature. In this case each segment can have its own sub-heading, with a synthesis that brings the findings together at the end of the chapter.

5. Under each sub-heading, list the main content that needs to be included, creating sub-sub-headings if needed. If you began by making a long and unstructured list of content, you can now feed that into the developing structure by inserting it as bullet points under the relevant headings. You need to ensure that all the content you want to include has been allocated a place.

6. As you go, you can slot in ideas, references, quotes, clarifications, and conclusions as they occur to you, to make sure they are not forgotten.

7. Check that there is an appropriate balance between and within sections, and that the structure facilitates the logical and coherent description of the research study you have undertaken.

8. Take feedback from others at this stage, before you begin to fill in the detail.

Filling in the detail

It can be a good idea to put the word limit to the back of your mind at this point, and concentrate on getting everything recorded in a document. You can always edit upwards or downwards later as necessary.

Writing as you go along

It is likely, and advisable, that you will not wait until the end of your research before starting to write it up. You may be required to produce one or more chapters for assessment part way through your research. The process described above can be used for any individual chapter you are working on. It is important to be prepared to critique and revise your own work several times. Even the early chapters submitted for assessment, and passing that assessment, may need to be revised later on. This is not a failure, but a positive sign of increased experience and skill.

Developing an argument

An important aspect running through your dissertation will be your argument for:

- Why this specific topic is worth researching;
- Why this is a good way to research it;
- Why this method of analysis is appropriate; and
- Why your interpretations and conclusions are reasonable.

You will refer to the work of others as you make your argument. This may involve critiquing the work of established leaders in the field. While it is important to be respectful in the way that you discuss others' ideas and research, you are expected to engage directly, and even openly disagree with existing writing.

In Taylor's (1989) book on writing in the arts and social sciences, he suggests that the following different approaches offer a range of academically legitimate ways to engage with published work.

- Agree with, accede to, defend, or confirm a particular point of view.
- Propose a new point of view.
- Concede that an existing point of view has certain merits but that it needs to be qualified in certain important respects.
- Reformulate an existing point of view or statement of it, such that the new version makes a better explanation.
- Dismiss a point of view or another person's work on account of its inadequacy, irrelevance, incoherence or by recourse to other appropriate criteria.
- Reject, rebut or refute another's argument on various reasoned grounds.
- Reconcile two positions that may seem at variance by appeal to some 'higher' or 'deeper' principal.
- Develop an existing point of view, perhaps by utilising it on larger or more complex datasets, or apply a theory to a new context.

(Adapted from Taylor 1989:67)

It is important that you are assertive about what you are arguing, but it is unlikely that, in a dissertation project, you will be able to be definitive in closing an established academic debate. You should be open about where the gaps are in your research, and cautious about over-stating what you have found. Aim to be modest but realistic in relating your own research to the broader context.

Improving the structure and content

Once you have the dissertation in draft form it becomes easier to see where you can improve it. To make it easier to read you can use clear signposting at the beginning of chapters, and write links between sections to show how they relate to each other. Another technique to improve academic writing style is to ensure that each individual paragraph justifies its inclusion. More ideas will be presented in the Study Guide *The art of editing*.

You may choose to review your draft from the standpoint of a dissertation examiner, which might involve preparing a list of questions that you want to see answered, then reading through your dissertation scribbling comments, suggestions, criticisms, and ideas in the margin. If you have a marking guide then apply it to your dissertation and see if there are aspects that you can improve.

While you do this, be aware of whether you need to increase the number of words, or decrease it to reach your target. As you read you can then cross through material that appears unnecessary, and mark points that could be expanded. This will then form the basis for your next, improved, draft.

When to stop

Just as it can be difficult to begin writing, it can also be difficult to know when to stop. You may begin to feel that your dissertation will never be good enough, and that you need to revise it again and again. It may be helpful to divert your attention for a while to the finishing off activities you need to attend to:

- Writing the abstract and the introduction;
- Checking the reference list;
- Finalising the appendices; and
- Checking your contents page.

Coming back afresh to look critically at the main text may then enable you to complete it to your satisfaction. Remember the dissertation needs to demonstrate your ability to undertake and report research rather than to answer every question on a topic.

It is important to allow yourself enough time for the final checking and proof reading of the finished document.

Summary

- Devote time to planning the structure of the dissertation.
- Plan a structure that will enable you to present your argument effectively.
- Fill in the detail, concentrating on getting everything recorded rather than sticking to the word limit at this stage.
- Regard writing as part of the research process, not an after-thought.
- Expect to edit and re-edit your material several times as it moves towards its final form.
- Leave time to check and proofread thoroughly.

References

- Barrass R. (1979) Scientists must write. A guide to better writing for scientists, engineers and students. London: Chapman and Hall.
- Taylor G. (1989) The Student's writing Guide for the Arts and Social Sciences. Cambridge: Cambridge University Press.

Responsable du module

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