ESE:O – CARTA MANUAL

A Critical Approach to Scientific Reading and Writing

ese:o
escritura para liderar

CARTA
Consortium for Advanced Research Training in Africa

Table of Contents

FORWARD **5**

INTRODUCTION **6**

Before starting *6*

The importance of critical thinking and writing skills *7*

Academic English as the language of international communication for the development of knowledge *8*

What's in the manual and how to use it *8*

MODULE 1: CARTA AND ESE:O: PEDAGOGY AND METHODOLOGY **10**

1.1 CARTA's objectives and pedagogic approach *10*

1.2 ESE:O *11*

Why is a Chilean NGO working in Africa? *11*

ESE:O and CARTA *12*

The ESE:O Approach *13*

Working principles *13*

Critical thinking *14*

Collaborative work *14*

Peer review *15*

Training of trainers *15*

1.3 The online methodology: the four steps of the workshop *16*

Motivation *17*

Argument *17*

Writing *17*

Publication or delivery *18*

1.4 The online methodology: workshop assignments *18*

1.5 Assignments and evaluation *19*

Clarity *19*

Flexibility *19*

Diversity of instructor feedback *19*

Incorporation of academic input *19*

MODULE 2: WRITING A LITERATURE REVIEW CHAPTER **20**

2.1 The literature review chapter: function and purpose *20*

2.2 Contents of the literature review chapter *21*

2.3 The "research gap" *21*

2.3.1 The importance of the research question 22

Why is documenting the gap important? *23*

2.3.2 Challenges in documenting the gap 23

2.3.3 Using a mind map to explore your gap 23

2.3.4 Tips for writing your research gap section 25

2.3.5 What to do if your literature search has not convinced you that your research proposal fills a gap? 26
2.4 Critical discussion *26*
2.4.1 Integrity 27
2.4.2 Comparing and contrasting texts 27
2.4.3 Making a literature review matrix 28
2.4.4 Some tips on constructing a literature review matrix 30
2.4.5 Tips for writing from a critical perspective 30
2.4.6 What to avoid when discussing the literature 31
2.4.7 Cherry-picking 34
2.5 The writer's voice *35*
2.5.1 Scientific writing and the voice 35
2.6 Expressing a stance *37*
2.6.1 Learning how to express a judgement 38
MODULE 3: CONCEPTS AND CONCEPTUAL FRAMEWORKS **40**
3.1 The importance of concepts *40*
3.1.1 What is a concept? 40
3.1.2 Naturalised concepts 42
3.2 Critical reading *43*
3.2.1 Tips for critical reading 44
3.3 Conceptual frameworks *44*
3.3.1 Why is it important to discuss your conceptual framework? 44
3.3.2 What are the sources of your conceptual framework? 45
3.4 Concept maps *46*
3.4.1 What is a concept map? 46
3.4.2 Requirements for using concept maps 47
3.5 Citation, plagiarism and how to beat it *48*
3.5.1 The importance of correct citation 48
3.5.2 Authorship and integrity 48
3.5.3 The dangers of plagiarism 49
3.5.3.1 What is plagiarism and how to avoid it 50
Using a source's language without quoting *51*
Using information from a source without attribution *52*
Paraphrasing a source in a form that stays too close to the original *53*
3.5.4 How to avoid plagiarism 54
MODULE 4: BUILDING A TEXT: TITLES, HEADINGS, AND SUBHEADINGS **55**
4.1 The importance of structure *55*
4.2 The title *56*
4.2.1 Examples of title styles: Obesity in Africa 56
4.2.2 Functions of the title 57
4.2.3 How to create a good title? 58

4.2.4 Keywords 59
4.3 The sections *60*
4.4 Sub-titles or Sub-headings *62*
4.5 Paragraphs: heart of the narrative structure *63*
4.5.1 How to write a good paragraph 63
4.5.2 What to avoid 65
4.6 Topic sentences *65*
4.6.1 How to write a good topic sentence 66
4.6.2 What to avoid 66
4.7 Connectors *67*
4.8 Sentences *68*
4.8.1 Essential aspects of a sentence 68
4.8.2 Verbs, nominalisation, and the passive voice 69
4.8.3 Proximity of nouns and verbs 70
4.8.4 Subject-verb agreement 71
4.8.5 Long sentences 71
4.8.6 Reviewing sentence grammar 72
4.9 Correction and evaluation rubrics *72*

References **73**

Copyright **76**

FORWARD

BACK

This manual owes much to the early career researchers from many African countries who have contributed to our writing workshops over the years with their work and ideas. We have learned a tremendous amount from you. Thank you for your help in improving our methodology and evaluation rubrics and sharpening the assignment instructions. We hope that the manual, building on this rich experience, will be helpful to your successors and be an interesting read as well.

Globally speaking, the text originates in another Southern country (Chile) but its authors' lives have belonged equally to the South and the North. Such divisions, we believe, are arbitrary and will gradually disappear as the world comes to embrace diversity and nurture creativity as a universal gift.

However, the values underlying CARTA's work—the pursuit of knowledge to improve life and health (for the many, not just the few), scientific integrity, critical and collaborative learning—cannot be taken for granted in today's world. To meet contemporary challenges, we must fight to preserve and consolidate them. The best way of doing this is by internalising these values so that they are part of our DNA. This manual is pledged to that task.

Soledad Falabella and Sebastian Brett
The ESE:O team

INTRODUCTION

BACK

Before starting ^

Dear CARTA fellows, researchers, and colleagues,

The ESE:O team gives you a warm welcome to this manual *A Critical Approach to Scientific Reading and Writing*. It aims to provide some basic skills that will help you write your doctoral thesis and any other academic text— including research articles and book chapters— so that they are well structured, logically coherent, and engaging.

This manual is the fruit of 10 years of partnership between ESE:O, an educational NGO specialized in distance learning of academic literacy based in Santiago, Chile and the Consortium for Advanced Research Training in Africa (CARTA). CARTA's overall goal is to establish self-sustaining, internationally competitive, multidisciplinary research hubs in African universities that conduct research to improve population and public health and to train the next generation of African research leaders.

The manual has been designed specifically for:

- Young scholars of the CARTA doctoral fellowship program, past and present;
- CARTA faculty members with a commitment to helping their students improve their writing;
- All CARTA's member universities and research centers in the fields of public health and population studies. Although geared to CARTA's doctoral teaching program and the production of doctoral theses, the manual will be useful for the production of any academic text, including research articles and book chapters.

This manual is intended for use by researchers and faculty engaged on a personal academic writing project, and by faculty teachers and supervisors so that they can use its perspective and tips when commenting on their students and supervisees' writing.

Here you will find concepts and practical advice that will help you become a better writer and gain confidence in your ability to communicate your ideas effectively in English. We hope that supervisors and senior academics will also find the manual a useful teaching aid. Ultimately, everyone with this knowledge can share it with other researchers so that its positive effects are multiplied.

We base our work on encouraging a critical approach to scholarship, and on the idea that academic writing is essentially a social activity that flourishes best through collaborative work. So, first of all, what do we mean by a critical approach? And why is a mastery of academic English so important in the context in which we work?

The importance of critical thinking and writing skills ^

All the elements that we borrow from others to develop our own ideas are fallible. As researchers, we must engage, understand, and appreciate them, but also detect and address their flaws and shortcomings. This is what we mean by a critical approach.

Nowadays, the skills of critical thinking, reading and writing are viewed as fundamental elements of the educational curriculum from an early age. Thinking and writing clearly and critically allows us to contribute with solid judgments that favour the improvement of both personal and social life.

These skills are fundamental to one's development as an aware and active person in society, and are important in achieving personal, educational and work goals. Developing them promotes the cultural, social and economic development of communities and nations, strengthens democracy, and promotes human rights

A doctoral dissertation or project in the public health sciences aims to advance our knowledge in a given field, even if only modestly, for the benefit of humanity. Advances in the field of public health require a critical approach because progress depends on our ability to identify and address gaps and shortcomings in existing knowledge.

Writing and scholarship are social activities. The idea behind a project may originate with the researcher, but ultimately its rationale and value is not individual, but social. The research idea must be built on concepts, information and ideas developed by others in a social context. This is equally true of the methodology used, and most importantly, of the language and codes we take for granted to communicate our findings. All these elements that we borrow from others to develop our own ideas are fallible. As researchers, we must therefore engage, understand, and appreciate them, but also detect and address their flaws and shortcomings. This is what we mean by a critical approach.

Academic English as the language of international communication for the development of knowledge ^

The United States and England publish more indexed academic journals than the rest of the world as a whole. Scientific publications in English constitute approximately 86% of the academic journals of the world.
(Graham et al., 2011).

The international language or "lingua franca" for the academy is academic English. Most scientific exchange follows the publication or presentation of research papers in that language. An investigation conducted in 2011 found that the United States and England publish more indexed academic journals than the rest of the world put together. Approximately 86% of the academic journals published in the world are published in English (Graham et al., 2011). In fact, global academic life, including the most influential institutions and journals with the greatest impact, is conducted in academic English.

Many students entering higher education in Northern countries do not master academic English. To address this situation, universities and colleges generally offer free academic writing courses in English, or writing centers that students use to help them cope with term papers and the like. In countries with more limited resources, such programs rarely exist, making it extremely difficult for even the most gifted early career researchers to participate as equals on the global academic scene. Currently, most students who enter higher education in Africa have not received any training in reading, writing and critical thinking for academic purposes. Surveys of 80 CARTA fellows from Cohorts 4-7 show that 57% had received no such training either at graduate or undergraduate level. Of the 43% who said they had attended some writing classes at African universities, most were short courses in grant proposal and manuscript writing lasting from a few hours to three days. Hence an online writing course offers to help fill this gap.

What's in the manual and how to use it ^

- The manual is divided into four modules:
    - Module 1 provides background on ESE:O's collaboration with CARTA, the online literature review workshop, and ESE:O's approach and methodology. It will be helpful as background to those using the manual as part of a writing workshop, and also to academics planning to organize writing workshops in their own institution.

- In Module 2 you will find discussion of the function of a literature review chapter; the importance of the research gap and how to document it; tips for using a mind map; the role of critical discussion; use of a literature review matrix; development of your authorial "voice", and taking a stance.

- Module 3 is devoted to concepts, their role in scientific investigation, conceptual frameworks and concept maps. It also deals with citation and references, academic integrity, different forms of plagiarism and how to avoid them.

- Module 4 goes into detail on writing issues, such as titles and how to write them, subsections and subtitles, how to write a good paragraph, topic sentences, connecting phrases, correct sentence formation, and style issues. It also introduces the rubrics (evaluation criteria) used by ESE:O for assignment evaluation.

- This manual should be used in conjunction with other CARTA-ESEO resources, including rubrics, presentations and instruction videos. The videos are intended to provide a graphic introduction to the skills of academic writing, while the manual goes into greater detail, discusses examples and provides other useful resources, such as evaluation rubrics and links to useful webpages. In addition, you can access PowerPoint presentations and a rubric. By clicking on the hypertext in the manual you can access the relevant video, rubrics and presentation automatically.

- In addition, at the end of the manual there is a list of relevant external resources that will broaden the learning process.

- In using the manual you will "learn by doing": as you go through the various stages, you will steadily develop and improve your own text until it is a publishable document. In other words, rather than learning by rote or repetition, you will be working on and improving what matters to you.

MODULE 1:
CARTA AND ESE:O:
PEDAGOGY AND METHODOLOGY

BACK

1.1 CARTA's objectives and pedagogic approach ^

CARTA's pedagogic approach is interactive, self-driven learning. It believes that knowledge comes with practice and problem-solving in a cooperative endeavour

The Consortium for Training in Advanced Research in Africa (CARTA), is a consortium of 9 universities and 4 African research centres dedicated to training the next generation of African research leaders in population and public health. CARTA fellows from Kenya, Malawi, Nigeria, Rwanda, South Africa, Swaziland, Tanzania and Uganda are academics and health workers who have embarked on doctoral research projects to improve population and public health in their countries.

CARTA's pedagogic approach is interactive, self-driven learning. It believes that knowledge comes with practice and problem-solving in a cooperative endeavour. It values evidence and logical argument (critical thinking) over hierarchy and dogma. This approach involves respect for self and others, and the key role of dialogue in knowledge generation and in progress toward a more equal world.

CARTA organises annual month-long training events known as Joint Advanced Seminars that are attended by its grantees, their academic supervisors and invited facilitators from Northern partner countries, including instructors from ESE:O.

1.2 ESE:O ^

ESE:O follows the "Literacy for Life" approach, a competency measurement model based on each person's ability to "cope and move forward" by making good use of language and critical thinking.

ESE:O is a Chilean non-governmental organization that uses internet technology to create spaces for learning and dialogue for communities that face historic challenges in getting their voices heard and knowledge valued by the international community. These include early career researchers from countries with emerging academic cultures in the Global South, as well as writers from marginalised indigenous communities fighting for recognition of their culture.

In its 15 years of work, ESE:O has trained more than 14,000 people on 4 continents through partnerships with universities and institutions such as the Ford Foundation, the African Population and Health Research Center (APHRC) in Kenya, the Monterrey Institute of Technology in Mexico, and the OECD Office for Latin America. It has developed an innovative methodology adapted to the needs of the different groups with which it forms strategic alliances.

ESE:O follows the "Literacy for Life" approach, a competency measurement model based on each person's ability to "cope and move forward" by making good use of language and critical thinking. This is especially important in higher education, where performance is measured by people's ability to produce quality professional and academic argument and writing (presentations, tests, exams, reports, theses, and published articles).

These standards are recognized internationally. Reading proficiency and critical thinking are part of the Program for International Student Assessment (PISA), a test of the educational attainment of 15-year-olds in which OECD countries and more than 50 other partner countries participate (OECD, 2018).

ESE:O's instructors have long experience in the generation and publication of articles in peer-reviewed international journals, and the editing and translation of academic articles by researchers from Africa and Latin America.

Why is a Chilean NGO working in Africa? ^

Africa and Latin American countries like Chile face common challenges in their post-colonial academic cultures. They share the need to compete in a world of scholarship that is heavily skewed towards the culture and linguistic/intellectual conventions of Northern countries, and particularly English-speaking ones.

We are international experts in the development of literacy skills with more than ten years' experience in Latin America, Africa and Asia. ESE:O considers reading and writing as socially embedded practices and uses networking and technology to our advantage. Our courses, workshops and projects are designed around the effective use of language for personal and community empowerment, building capacity in critical writing and publishing as a driver of democratic social change.

In a post-colonial context, voices from the global South are under-represented in knowledge production and dissemination. This undermines researchers chance to become leaders. Writers from the South must gain access to an established "discourse community" to redress this challenge. ESE:O's methodology uses collaborative learning and training of trainers" (ToT) for sustainability and replicability by trainees at a local level.

We have extensive experience in the development of publishing capabilities. Thus, as a result of our projects and workshops, individuals and groups of different kinds succeed in publishing their work, including academic writings, books, manuals, memoirs and anthologies.

In the field of gender and sexualities, ESE:O gained the support of the Ford Foundation to run online writing workshops for scholars from the Global South seeking to publish their studies in international peer-reviewed journals. Most of the participants in these workshops were Africans. In addition, and as a result of this grant, between 2007 and 2012 ESE:O ran nearly 30 face to face writing workshops in this field hosted by academic institutions in South Africa, Kenya, Zambia, Argentina, Mexico, China, Brazil, and Chile (Falabella & Martínez, 2012).

ESE:0 prizes its work with CARTA as an unusual and inspiring example of collaboration between Southern NGOs. ESE:0's instructors include both native and second language English speakers.

ESE:O and CARTA ^

Since 2010, ESE:O has participated as a Southern partner in annual academic activities organized by CARTA. More than 175 African PhD candidates and their supervisors have already taken part in its workshops.

ESE:O supports CARTA by teaching reading and critical writing skills to young African PhD students. We guide them through the writing of the first draft of the literature review chapter, so they learn the skills they will need to write the remainder of their doctoral thesis as well. We urge students to develop a language style that will aid communication of their findings to experts and non-experts alike.

ESE:O's activities in the CARTA fellowship program include:

- Face-to-face workshops with fellows at CARTA first joint advanced seminar (JAS1), in which it teaches the ESE:O methodology and essential concepts.
- Following JAS1, an eight-month online writing workshop (InterJAS 1-2) in which the fellows complete up to 10 assignments that lead to the writing of the first draft of their literature review chapter.
- At the close of the workshop, ESE:O holds further face to face classes with fellows and supervisors at JAS 2, at which the results of the course are evaluated and lessons are further developed.
- Further online activities are conducted between JAS2 and JAS3 (InterJAS2-3, an interval of 20 months) in which fellows revise their literature view chapter and write an introduction to their dissertation, both of which are deliverables for JAS3.

The ESE:O Approach ^

ESE:O combines face-to-face and online teaching to enhance learning in the classroom. It uses information technology for distance teaching and to create local and global learning communities. It has a bi-lingual website (http://www.eseo.cl) in English and Spanish, with an interactive platform or "virtual campus" on which it hosts its academic and professional writing workshops.

ESE:O Power-points used in face-to-face workshops, and other teaching resources are available to fellows and supervisors on the platform.

Working principles ^

The production of this manual responds to making the ESE: O methodology accessible so that it can be used and adapted to the needs of all the institutions participating in the CARTA initiative.

ESE:O's methodology has four guiding ideas: critical thinking, collaborative work, peer review, and training of trainers (TOT).

Critical thinking ^

As a pedagogic concept, critical thinking involves approaching knowledge from an analytical/evaluative perspective rather than simply one of memorisation and reproduction. Here is one definition:

"Critical thinking is the intellectually disciplined process of actively and skilfully conceptualizing, applying, analysing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action" (Foundation for Critical Thinking (n.d.).

In its workshops with CARTA, ESE:O seeks to stimulate critical thinking in a variety of ways. For example, by:

- Encouraging prospective researchers to write about their motivation;
- Urging them to examine the work of established authors critically and from their own standpoint, rather than merely reproducing or summarizing existing knowledge;
- Cultivating high standards in the examination and evaluation of evidence, and the ability to weigh it in writing;
- Developing the writing tools to build a coherent and compelling argument in defence of one's point of view.

Collaborative work ^

Both in face-to-face and online workshops, ESE:O promotes positive group dynamics. It believes strongly in a collaborative framework for learning, based on mutual support, criticism and reinforcement, and encourages active participation in debate and the sharing of learning resources.

For example:

- It divides the class into small groups or couples that mutually comment on each other's work, developing their critical capacity and enriching the self-editing of their texts;
- It uses its virtual platform to organize forums about different writing problems where participants can raise and share ideas or exchange information and sources.

Peer review ^

Peer review is recognized in the academic world as the established system for quality control in academic journals. ESE:O uses this concept to accustom participants to constructive criticism and at the same time develop their capacities as critics and evaluators.

For example:

- It has incorporated a peer review process into the methodology of workshops devoted to the production of academic articles;
- It participates with CARTA in facilitating the online participation of external evaluators in reviewing student work.
- It has developed a rubric for the evaluation of academic writing skills that can be used by teachers, supervisors, and the students themselves.

Training of trainers ^

The methodology of ESE:O is designed so that the academics who have participated in the workshops can use it in their own teaching. It aims to enrich their work as university lecturers and provide them with the basics to organize academic writing courses in their own universities or institutions. This training of trainers (TOT) perspective allows the benefits of the courses to be shared more broadly, and increases sustainability.

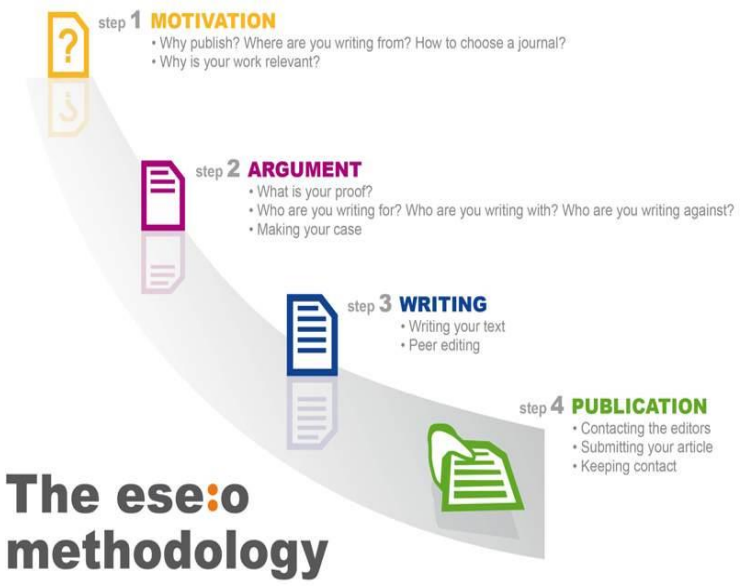
For example:

- These benefits include the rubrics used to enable an unbiased and objective assessment of student progress in accordance with internationally recognized standards.
- The production of this manual responds to making the ESE: O methodology accessible so that it can be used and adapted to the needs of all the institutions participating in the CARTA initiative.

1.3 The online methodology: the four steps of the workshop ^

During the first face to face workshops at JAS1 (a three-day work process) CARTA fellows, most of whom have met for the first time at the JAS, share their thoughts in writing about their motivation and challenges. Instructors use extra-academic manifestations, in particular poetry and recitation, to underline the creative spring of all writing. Fellows are familiarised with key concepts, such as the research gap, conceptual framework, strategic reading, literature clusters, topic sentences, etc.

For the online workshop that follows, ESE:O uses a modular, step-by-step and flexible teaching system. It distinguishes analytically between four steps in the production of a dissertation or publishable academic article in accordance with international standards: **Motivation, Argument, Writing,** and **Publication.**



Over an eight month period, students will complete and upload up to ten assignments corresponding to each of these steps. Instructors make comments and suggestions in response; encourage participants to react to comment; and raise issues in a forum in which everyone can participate.

Although they form a timeline in the workshop's development, in practice the four steps overlap. For example, despite publication being the last stage, the choice of the preferred journal strongly influences various aspects of the writing process and should normally be made at the beginning of a project. Equally, argument not only precedes writing but accompanies it—indeed the writing process itself can change the argument significantly. Despite these overlaps, this analytical division has proved very useful in distinguishing the elements necessary to carry out a successful writing project. Let's briefly review them:

Motivation ^

The lived experience behind academic (and particularly social) research is fundamental, even if it is often invisible. During the initial face-to-face workshop with CARTA fellows, we ask them to write about, and discuss, their motivation in undertaking research. They must ask themselves: why do I want to research and write about the topic I have chosen? Why not another topic? How does my experience support it? What do I hope to achieve?

Answering these questions allows them to:

- Link their intellectual activities to their everyday "real world";
- Gauge whether their current motivation is strong enough for them to surmount potential difficulties and complete their research, doctoral thesis or report;
- Choose the subject and field in which to be involved, as part of their scientific and/or professional identity;
- Strengthen their critical thinking skills and build their own "voice" as scientific authors.

Argument ^

Fellows must show with evidence that their research, project or work generates a contribution to knowledge and will help humanity, that is, that it fills a **research gap**. This means:

- Developing their capacity to participate in a critical discussion, that is, to summarize, compare, contrast and critique key sources;
- Learning to investigate the conceptual frameworks used by researchers and develop their own approach from them;
- Developing the necessary techniques to communicate ideas clearly and vividly, that is, learning to work with titles, keywords, structure (sections and sub-sections), paragraphs, topic sentences, connectors, referencing, and self-editing.

Writing ^

During the workshops, participants begin to write their thesis, articles or reports in stages. These are methodically reviewed and evaluated by two co-instructors, who make suggestions to refine the content. Some stages involve peer review and editing.

For constructive feedback, standardized review criteria (predefined evaluation rubrics) are used with indicators that reflect deficiencies and success dimensions, and allow evaluations to be consistent and fair. These rubrics in combination with other ESE:O-CARTA training materials allow fellows to easily read their strengths and the challenges they face and develop training of trainers (TOT) skills.

Publication or delivery ^

Whether for delivery to university authorities or submission for publication in a scientific journal, the document must go through several stages. The last step of the methodology is to guide the author to successfully complete these steps. These include:

- Final revision of the document to eliminate typos, grammars, etc.;
- Ensuring that it complies with the format and style of the academic institution, journal, or editorial chosen;
- Writing letters to the editor and following up on them;
- Incorporation of changes proposed by peer reviewers or university commentators.

1.4 The online methodology: workshop assignments ^

From April through October, during InterJAS 1-2, ESE:O uploads on the platform detailed instructions for up to 10 assignments at approximately fortnightly intervals. Fellows go progressively through the stages of writing a literature review chapter of their future PhD dissertation. When fellows upload their assignment, generally a text of about 1,000 words, by a deadline, ESE:O co-instructors provide detailed feedback. All work and comments are shared. The assignments program for 2018 includes the following topics:

1. Discussing and documenting your research gap;
2. Revising and rewriting your research gap;
3. Creating a literature review matrix;
4. Developing a critical approach to the discussion of research literature;
5. Preparing a rough draft with table of contents, introduction and conclusions;
6. Reviewing and rewriting your rough draft;
7. Concepts, conceptual frameworks, and concept maps;
8. Reviewing methods;
9. Writing a detailed outline;
10. Preparing of first draft of the literature review chapter;
11. Final peer-review.

1.5 Assignments and evaluation ^

ESE:O follows the following principles in its approach to assignments and evaluation:

Clarity ^

Assignment instructions are geared closely to evaluation standards. On the one hand, they are as clear as possible, as misunderstanding of instructions can lead to wasted time. On the other hand, an important cognitive competence the ESE:O methodology seeks to build is that of following instructions closely and performing them successfully. Therefore, participants are encouraged to adhere as closely as possible to them. A numbered list of "What to dos and What to avoids" is a useful format. Also, there is permanent communication available in case of any doubt. Fellows who fail to follow instructions will be asked to repeat the assignment.

Flexibility ^

It is often not possible or desirable to adhere completely to a pre-established schedule for assignments. Fellows may face challenges with a particular assignment; in such cases they are asked to repeat it, and the planned schedule is adjusted. Extra time may be needed for discussions using the Forum space on the platform. Flexibility is essential in planning an online workshop.

Diversity of instructor feedback ^

Assignments are reviewed in detail and independently by at least two instructors. Assignment review has several different components, such as adherence to the instructions, reference to evaluation rubrics, conceptual and epistemological issues, and technical writing and language suggestions. Different instructors complement one another in covering these components.

Incorporation of academic input ^

ESE:O instructors focus on language, structure, logic and style but can rarely comment on substantive content. Since fellows are writing a first draft of a future thesis chapter it is important that their work is available to academic supervisors and mentors for comment.

In many cases, the workshop runs in parallel with fellows' regular consultations with their academic supervisors. Fellows are encouraged to make their workshop assignments available to supervisors for comment as early as possible.

In part because some fellows do not have supervisors prior to JAS 1, CARTA now has a group of external reviewers who assist fellows with suggestions on how to improve the focus of their research or coverage of relevant literature. ESE:O works closely with external reviewers.

MODULE 2:
WRITING A LITERATURE REVIEW CHAPTER

BACK

In this module, you will find discussion of:

1. The function of a literature review chapter;
2. The importance of the research gap and how to document it;
3. Tips for using a mind map;
4. The role of critical discussion;
5. The use of a literature review matrix;
6. The development of your authorial "voice", and
7. Taking a stance.

2.1 The literature review chapter: function and purpose ^

> *A literature review requires the writer to perform extensive research on published work in one's field in order to explain how one's own work fits into the larger conversation regarding a particular topic (*Purdue Owl Online Writing Lab (n.d.)

The literature review chapter of a research dissertation serves to contextualise the study so that the expert reader can see exactly what it adds to what was known beforehand. It establishes what is new and interesting about the study in question (the research gap). It discusses the conceptual and methodological aspects the study shares with others, and how it advances on them.

You will doubtless have come across other kinds of literature review, such as *systematic reviews* and *scoping reviews*. A *systematic review* attempts to summarise the existing research on a specific health care intervention (often the subject of controlled medical trials), using a carefully formulated plan that specifies precise criteria for inclusion and the comparison of results, and minimises bias. This methodological plan, often called a Cochrane protocol, must be rigorously followed. Systematic reviews are designed to help health professionals make better informed clinical decisions. A *scoping review*, on the other hand, aims to map out all the literature on a complex and hitherto little studied subject and may lack the same rigorous attention to methodology that a systematic review must have.

A typical literature review chapter of a doctoral dissertation is not a free-standing review but is closely tied to a specific research question (the topic), and forms part of a much longer text documenting the methodology and results of the study.

2.2 Contents of the literature review chapter ^

At a minimum, the chapter should include:

1. An **introduction**, in which you briefly introduce your research question and refer in order to the issues your review will address, including a discussion of the methods you used to search for and select your sources, and a brief summary of your conclusions.
2. A critically discussed **research gap.** A "mind map" is a useful tool in building your argument in documenting your research gap.
3. An **analysis of the concepts** that underlie your research and of the inspirations for the conceptual framework you have adopted.
4. A **discussion of the merits of the methodological approaches** found in the literature and the reasons for your choice of methodological approach.
5. A **critical discussion of relevant theories** developed in the literature, especially those that provide hypotheses you aim to test.
6. A **comparative, critical study of relevant research findings**. For this purpose we ask workshop participants to make a "literature matrix" to summarise key findings in tabular form (see 2.4.3 below). The matrix is a useful memory tool and may form part of the dissertation.
7. **Final discussion and/or conclusion**, summarising 2-6.

2.3 The "research gap" ^

Your topic may be important and valuable, but has it already been much researched? Is there room for more research in this area? On what exact questions is there a need for better answers?

As doctoral students, you have passed from the stage of reproducing and commenting on knowledge, to producing it yourselves. To think up a viable and relevant research project you need know the literature in your field well.

Your topic may be important and valuable, but has it already been much researched? Is there room for more research in this area? On what exact questions is there a need for better answers? Are there drawbacks in the methodologies used in previous studies that you could remedy? Is a different approach necessary, possibly involving concepts from another discipline?

All these questions are expressions of a general issue researchers have to address when starting a research project: **how does it enrich what researchers before me have already done?** Specifically, what is the **research gap** that my work addresses?

To provide an answer, you will have to read widely and deeply on your topic. Participants in the ESE:O workshop are expected to find, read, and store notes on at least 110 academic articles.

Your gap may include any of the following aspects:

- An under-researched area of potential policy importance
- A little explored but relevant aspect of a public health problem
- A barely studied geographical area, or population
- The use of a novel theoretical framework or approach
- The application of an unusual methodology or technique
- The need to import concepts from another discipline

The discussion of the research gap is one of the most important parts of the literature review chapter of a research dissertation. It should normally go at the top of the table of contents below the introduction. A brief description of the gap should also be part of the abstract of a journal article.

2.3.1 The importance of the research question ^

Your job is not to reproduce or merely summarise the existing literature, but to "interrogate" it: to search for missing elements, unexplained questions, conceptual issues, disciplinary limitations, etc., that help to define your own research question and/or justify your approach.

The research question is the lens through which the literature must be viewed. Defining it precisely is often less easy than it first appears. As a writing project, the literature review chapter of a doctoral dissertation is a good place to start in this quest for a sharper focus. Looking at, and discussing what other researcher have done and found should heighten your awareness of the research gap your study can fill—if there is one—and if not, what questions still need to be addressed.

In other words, your job is not to reproduce or merely summarise the existing literature, but to "interrogate" it: to search for missing elements, unexplained questions, conceptual issues, disciplinary limitations, etc., that help to define your own research question and/or justify your approach. The literature review chapter should be an original and compelling contribution to our understanding of your research topic.

Why is documenting the gap important? ^

- Science is cumulative and grows in piecemeal fashion as gaps in knowledge are identified and filled.
- You need to show publishers or funders why your work is worth publishing or supporting.
- You have to demonstrate how your research could contribute knowledge that is not only interesting but useful to humanity.
- The ability to discuss and document a gap from a critical evaluation of the literature adds to your credibility as a scholar.

2.3.2 Challenges in documenting the gap ^

Many researchers find it challenging to document their research gap. Instead of searching the literature to establish clearly what is new or relevant about the research questions they are asking, they merely summarise what is known about the subject.

Documenting your research gap is NOT the same as providing background based on a summary of the literature available. It is important to understand what the difference consists of:

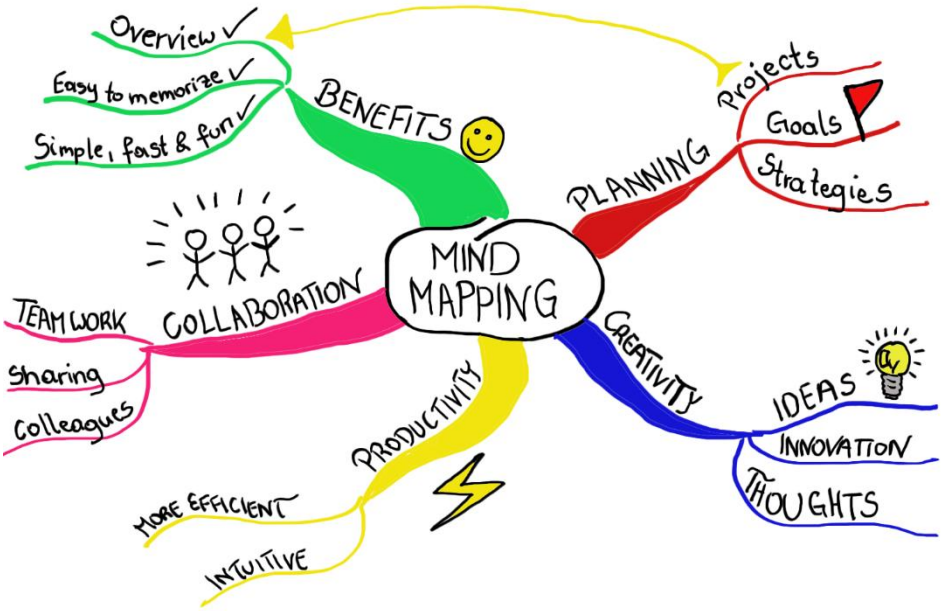
- In documenting your research gap, your research question must drive your reading and the discussion. Unfocused reading is unlikely to help.
- The task requires not just summarising and narrative ability, but critical judgment: why is a particular approach insufficient? Why do concepts need to be critically examined? Has a certain aspect of the problem been overlooked? How could your research make a strategic difference?
- In raising and trying to answer questions like these you are making an original contribution to knowledge, not just reproducing what others have done. A PhD involves creating NEW knowledge. Your writing is the place where you need to demonstrate that you have met that standard successfully.
- The literature review is where you **consolidate** these arguments, backed by a detailed discussion and numerous references that show that you command the literature.
- A brief summary of the context of your study would normally go in the introduction to your thesis, not in the literature review (which, not surprisingly, needs to be about the literature).
- As a key section of your literature review chapter, your discussion of the gap must be clearly written, have a logically coherent structure, flow, and be compelling.

If this sounds daunting, below are eleven tips for writing your research gap. But first, let's learn how to use a **mind map** to explore your gap graphically BEFORE you start writing.

2.3.3 Using a mind map to explore your gap ^

Mind maps are useful tools that can help you explore your research gap in visual form. They are often used as whiteboard presentations during seminars involving colleagues or mentors. Using a

mind map you will be able to organize, visualize and summarize a complex idea graphically and store all the essential information on a single page. To build a mind map you must make inferences and conceptualize. Mind maps work better if shared and developed in a group setting.



http://haydonlearningblog.com/differentiation/mind-maps-a-great-revision-tool/

HOW TO MAKE A MIND MAP

1. Take a blank piece of paper and turn it sideways.
2. Start from the center of the page and work towards the edges.
3. Make the center a clear and strong picture that shows the main point of the map. Or use a word or two as a title. You may draw a circle around it.
4. For the first sub-heading or point, draw a line out from the circle in any direction.
5. On this line or at the end of it, draw a picture or write a key word to show this new point. Circle this too.
6. For individual facts to do with this point, draw new lines out.
7. Go back to the center, to record your next sub-heading.
8. Your map will resemble the spreading branches or roots of a tree.

TIPS

- Print in lower case letters and use only one or a few words at a time.
- Use pictures or symbols.
- Use color for different branches, ideas or links.
- Use color to make things stand out.
- Think in 3-D.
- Use arrows to show links between different parts (iRevise.com, n.d)

Now let's follow the eleven tips and see how your mind map can help you with the writing task.

2.3.4 Tips for writing your research gap section ^

1. Read as widely as you can around your proposed research idea, noting where recent authors indicate knowledge gaps.
2. Review the findings of scoping reviews that summarise the status of research in your field.
3. Use a **mind map** to clarify and develop your ideas.
4. Share it with colleagues and gain their insights.
5. Write your notes up as bullet points.
6. Elaborate the bullet points into paragraphs with topic sentences and connectors. See Module 4 (4.6. and 4.7) for discussion of these writing tools, and tips for using them.
7. Organize your text from the general (overall research gap) to the specific (other unanswered questions).
8. Make sure you have sufficient relevant references to back up your points (at least 5 sources per paragraph).
9. Remove all content that does not refer directly to the gap.
10. Use topic sentences to begin paragraphs, and build transitions and bridges between paragraphs to help the text flow.
11. Make your tone persuasive. In grant proposals, you need to convince funders to support your research.

Here is an example of a paragraph outlining a research gap:

> *Even though the studies listed above* (Editor's note: there are 21 citations in the previous paragraph!*) call attention to the reality and possible complications of the growing presence of African migrants in China, most of them are general and poorly disaggregated. Majority of the studies treat Africans as a homogenous population even though these international migrants possess diverse nationalities and originate from different corners of the African continent (for exception see Haugen, 2012). While making these studies unhelpful for arriving at concrete conclusions*

about specific African groups in China, it further gives rise to a difficulty in which it becomes arduous to delineate how groups differ in their experiences of the host society, particularly as members of distinct migrant communities. This study fills this gap by focusing on the movement and social experiences of Nigerian traders as a distinct group in contemporary African migration to China. (Cohort 6 fellow)

2.3.5 What to do if your literature search has not convinced you that your research proposal fills a gap? ^

- You may need to adjust your research proposal. Your review of the literature may have suggested some possible avenues to pursue.

- Discuss with your supervisor and expert colleagues what you have found, and how you might adjust your proposal. If in doubt, seek advice!

Don't be in denial. Avoid continuing if you are not convinced and/or if you do not convince your supervisors, mentors and peers. If you continue regardless, you will lose more time the more work you invest in a project that turns out to be unviable. Look for an alternative and feel pride in your rigour!

2.4 Critical discussion ^

Critical discussion is about weighing data and arguments from your own particular perspective. This is not something you will find in books or articles but depends on your ability to pose new questions and look for answers to them. It contributes to developing your own voice as a scientific author.

In order to identify and prove your gap, define your research questions and establish the originality of your perspective, you need to discuss the literature critically. By critical we don't mean engaging in a polemic with the author. The word critical comes from two ancient Greek words: "*kriticos*", which means "discerning judgement" and *"kriterion"* meaning a "standard" When combined, the two words come to mean "discerning judgment based on standards" (Foundation for Critical Thinking, n.d).

A critical discussion of the literature involves:

- Demonstrating that you are in command of the relevant literature so that you can identify the key studies and justify their inclusion as sources.
- Being able to select the data and arguments you need to support your study.
- Successfully summarizing evidence from the studies you are using to prove your point.
- Effectively comparing and contrasting this evidence with the approach/findings of other articles.
- Strategically presenting the strengths and weakness of the evidence using your critical judgment.
- Weighing and evaluating these, drawing your own conclusions. These contributions will provide value added to the debate.

2.4.1 Integrity

Critical discussion involves **demonstrating your integrity** as an author. An author's integrity is reflected in numerous ways. It includes:

- Scrupulous and unbiased attention to evidence;
- Care to acknowledge properly the work of others. See section on referencing and plagiarism, in Module 3 (3.5);
- Respect for the opinions of peers and colleagues;
- Accuracy at all times (for example in statistics and references);
- Language that is sensitive to gender issues and respects sexual minorities and religious differences;
- Awareness of the ethical imperatives involved in research and full compliance with ethical standards.

2.4.2 Comparing and contrasting texts

In the CARTA: ESEO writing workshop there is an assignment in which we ask you to discuss critically five sources that have been most useful in identifying your research gap. Specifically, your job is to review the relevance and usefulness of the studies to your own research questions, focusing on the following possible questions (among others):

- Do they formulate the research question correctly?
- What new and interesting questions do they raise?
- How do they differ in their use of concepts/theoretical approaches?
- What research methods do they use? Do they take proper steps to eliminate bias?
- How do the findings and conclusions affect your research question?
- Are the findings credible and/or useful? If not, why not?

Please see the resources listed under critical appraisal and discussion in Appendix 1 for more detailed explanations of critical appraisal criteria.

Note: **all of these questions involve matters of judgment**, that is, thinking through the implications of data and analysis **for your own research idea**. This contributes to developing your own voice as a scientific author. Critical discussion is about weighing data and arguments from your own particular perspective. This is not something you will find in books or articles but depends on your ability to pose new questions and look for answers to them.

Please remember: **in a PhD level literature review it is not enough to read, list, and summarize.** You need to think and have an argument of your own that you can relate directly to your research gap.

2.4.3 Making a literature review matrix ^

The challenges just described can be dealt with much more easily if you are able to collect, read, and sort information and argument from your reading according to a plan. This is the purpose of a literature review matrix.

A **"literature review matrix"** is a table in which you can summarize and organize new knowledge and process it meaningfully. Keeping track systematically of your reading in this way should save you hours of time, and help you structure your arguments better.

Here is a typical literature review matrix template:

Authors, title, journal	Date	Purpose	Population	Theme 1	Theme 2	Theme 3. Etc,

Adapted from *Health Sciences Literature Review Made Easy: The Matrix Method* by Judith Garrard. Cited in Duquesne University, http://guides.library.duq.edu/matrix

In the first three columns on the left you can identify the study (author , journal, date, purpose of study and population studied). The columns on the right should contain information from each study about a **theme** you consider has special relevance to your research question (e.g. methodology used, relevant findings, limitations, gaps identified, etc.). The number of columns you can have is only limited by space; in Word, normally ten would be acceptable. With more than ten, the columns may become narrow, and the font too small to be easily read.

Here is any example from the work of a Cohort 6 fellow, with 7 columns:

Use of algal biomass for urban greywater treatment and utilization of by-products for resource conservation

Literature review matrix

Author/Date	The main focus of the research question	The methodology used	Concepts /thecretical framework/Disciplin e	Location' population studied	Findings	Gaps/Further research
Kim, J., Lingaraju, B. P., Rheaume, R., Lee, J. and Siddiqui, K. F. 2010.	The study investigated the use of *Chlorella vulgaris* for nitrogen removal as potential wastewater treatment and biofuels Production (page 392)	Experimental study (Laboratory based)	Removal of Ammonia, Wastewater Effluent, *Chlorella vulgaris*	Cincinnati, Ohio, U.S.A. Wastewater effluent collected from the Mill Creek wastewater plant. (page 392)	-It was found that *Chlorella vulgaris* has potential to remove nitrogen in form of ammonia and ammonium ion from the wastewater. - *Chlorella vulgaris* reduced the total inorganic carbon concentration from wastewater. -there is an increase in the total biomass weight of *Chlorella vulgaris* during cultivation on wastewater. (page 392 and 394)	There is need to explore the techniques used in the harvesting of the algae. Further research on removal of ammonia in a large quantity of wastewater effluent (page 394)
Rinanti, A., Kardena, E., Astuti D. I. and Dewi, K. 2013	Identify potential microalga which can be used as a microbial Carbon Capture and Storage agent in the form of constructed consortium. (Page 1)	Experimental study (Batch growth Laboratory experiment)	Microbial Carbon Capture and storage (MCCS), Constructed consortium, *Chlorella* sp. genus, *Scenedesmus* sp., *Ankistrodemus* sp., Carbon dioxide sequestration, wastewater treatment (Pages 1 and 2)	-Bojong Soang wastewater treatment plant, Bandung, Indonesia. -14 sampling points were located by considering the direction of flow of wastewater in both the facultative and maturation pond in the wastewater treatment plant. (Page 2)	-*Chlorella* sp. genus, *Scenedesmus* sp. and *Ankistrodemus* sp., could act as MCCS agents. -The constructed consortium was efficient in CO_2 removal. (Pages 4-6)	-Cultivation of the CCS agent in the photobioreactor and document the environmental optimization parameters, -Study the hydrodynamic component for obtaining a higher removal efficiency of CO_2. (Page 7)

You can download several videos from Youtube that will start you off making your literature review matrix (Killam, L. (1), 2013); Killam, L. (2), (2013); Zahora, T., 2013). The full references are in the "Resources" appendix.

2.4.4 Some tips on constructing a literature review matrix ^

- Based on your mind map exploration, think carefully what themes to include. These may range from conceptual and theoretical issues (for example, how concepts are defined; what theories underlie the hypotheses tested); methodological questions— such as whether the studies are quantitative or qualitative—and debates over findings that are particularly relevant to your research question. Remember**:** you are not just "sorting" the literature but "interrogating" it for insights useful in your research.
- Read selectively and strategically, focusing on the themes you have identified. That means skimming over parts of articles that are of little interest.
- Make concise notes in your own words, using abbreviations as much as possible.
- I**nclude the page number of any quotations** to avoid having to search through articles later.
- To fit more into the columns, reduce the size of the font but don't make it so small your notes are difficult to read.

Making a literature review matrix can be tricky until you get the format right. But once you have done that, it should prove a great asset in your work. Out of 25 Cohort 7 fellows who completed the workshop in November 2007, a survey showed that not one of them thought it a waste of their time!

2.4.5 Tips for writing from a critical perspective ^

1. **Using the notes in your matrix as a guide, think out what you want to say, and plan your argument point by point**, using bullets for each point. Note the sources you will cite for each point. Plan on each point being a separate paragraph for your review.

2. Write a first draft of the critical discussion, paying attention to the coherence of your writing and paragraph structure: be sure to have a strong topic sentence at the beginning of each paragraph. (See Module 4: 4.6 for tips on topic sentences). Then develop a clear narrative with a beginning, middle and end. When you have finished the draft, leave it for a few days.

3. On re-reading the draft, cut or relocate all material that does not help support and develop your argument. Follow the instructions in this manual for improving your topic sentences. Make sure the paragraphs follow one another in a logical manner and use connectors to improve the flow.

4. Read the section to colleagues or friends. Note the sections in which they found the argument difficult to follow and work to improve the clarity. Make sure all statements are supported with references (at least 5 per paragraph).

2.4.6 What to avoid when discussing the literature ^

The "shopping list" syndrome.

The "shopping list" syndrome often involves long lists of summaries without any critical discussion at all. Please, don't do this. Avoid writing a disjointed series of paragraph each devoted to a summary of a different study, with no unifying argument. A text like this is very frustrating to read. Because there is a lot of detail but no interpretation to make sense of it and no clear narrative or argument to follow, the reader will soon feel lost. Your job as a PhD candidate is not just to show that you have read up on your subject: you must master the underlying debates in your field, and be able to think your way through them. The shopping list syndrome usually suggests that you are NOT THINKING CRITICALLY when you read.

In this extract from the draft literature review of a Cohort 7 fellow, we have a very conscientious and detailed presentation of evidence. But it is very difficult to follow the argument the examples should be illustrating. The section from which it is taken is entitled *Factors affecting knowledge and awareness of glaucoma.* Part of the problem is the amount of detail mentioned in each study, not all of it relevant to the section title. The paragraphs lack topic sentences to advance the argument and knit the discussion together—see Module 4 (4.6).

> *In a study done among African Caribbeans in the United Kingdom, Cross et al (Cross 2007) suggested that primary eye care to enhance glaucoma knowledge was underutilized and was undermined by perceived conflicts of interest. They suggested that it was important to enhance understanding between service users and ophthalmic practitioners. Several studies have shown that educational status, having had an eye examination is positively associated with awareness of glaucoma (Alemu 2017, Rewei 2014, Nkum 2015).*
>
> *Landers and colleagues in a study in Australia (Landers 2002) reported that women, people who were 40 years and above and those who were aware of a family history of glaucoma had more knowledge glaucoma than others. People with other risk factors did not show any greater knowledge even though 89% of all the participants had a previous eye examination. Michielutte and colleagues (Michielutte 1984) reported a low level of diabetes and glaucoma. They found the lowest level of knowledge were found in the extremes of age among the youngest and the oldest the study, being male unmarried and having a low level of education were associated with poor knowledge. Rhodes et al (Rhodes 2016) in a study assessing the impact*

of health education program on patient knowledge about glaucoma and attitudes about eye care reported that all patient responses in the knowledge and attitude domains improved from baseline after the health educations. Patients who were unemployed or had lower education were however less likely to improve their knowledge. Rhodes and colleagues (Rhodes 2016) concluded that improved knowledge about glaucoma may lead to improved earlier detection of glaucoma thus lowering the risk of blindness. Sleath and colleagues (Sleath 2017) recently reported the types of questions African American patients had about glaucoma for their providers. Most patients wanted to know what their prognosis was and what their IOP was. Majority of the patients (76%) preferred that doctors offered educational programs about glaucoma.

In conclusion it is important to determine the knowledge and awareness of glaucoma in the community. However, it is more important to determine the effect of education, counseling on knowledge and awareness and to determine the effect of improved knowledge and awareness on behavior in terms of uptake of preventive services (to prevent blindness from the disease), adherence to glaucoma follow up and adherence to anti-glaucoma medications to ensure good outcomes.

Unfocused criticism

The research question, and the problems it raises, should be the source of critical discussion of the literature. This is very different from, and more demanding, than just picking holes in others' work, even when such criticisms may be valid. That is, criticism must be driven by a purpose, as must the review as a whole.

Making valid critical comments about previous studies does not in itself advance an argument unless the criticism is focused on the research question. By focused, we mean arguments that arise out of a determination to *relentlessly and painstakingly* pursue a single research question. This question, and the problems it raises, should be the source of critical discussion of others' work. This is very different from, and more demanding, than just picking holes in other's work, even when such criticisms may be justified. That is, criticism must be driven by a purpose, as must the review as a whole.

Consider the following example of focused criticism, taken from an assignment on critical discussion by a Cohort 7 fellow who is investigating the epidemiology and management of dog bite injuries in Uganda. Citing four studies and due to various flaws in the research methods used, the author argues that it is still unclear why dog bite injuries become infected. Note how he begins the paragraph with a strong topic sentence and ends it with a clear conclusion. Moreover, the examples he cites and his criticisms are clearly relevant to the point he is making.

> *Beyond antibiotic use, other factors for infection of dog bite wounds have not been well explained. To describe predictors of infection of dog bite wounds, Tabaka et al (2015) followed up a cohort of dog bite injury patients and concluded that length and depth wound were the only determinants (Tabaka et al., 2015). Much as the cohort study was an appropriate design to study these, determining infection by mere phone call to patients who may not have technical capacity to identify infected wounds may have biased the findings. In addition, having not assessed the bioburden of the wounds at baseline, certainly puts the credibility of these findings in doubt as the bacteria may have been initially present and not developed later. Furthermore, given that Tabaka et al did not isolate the microbes responsible for the observed infections, there is a missed opportunity of providing an understanding of the pathogenic significance of specific organisms in the observed infections. Though these findings are in agreement with those of Ogden et al (2013), they sharply contrast with those of Medeiros and Saconato (2001) who found location of the bite significantly associated with infection (Ogden JRK et al., 2013, Medeiros and Saconato, 2001). However, all these studies did not explore the linkage between infection as an outcome and pre-treatment practices that victims undertook before presenting to the health facilities. In short, determinants of dog bite wound infection are not well explained.*

2.4.7 Cherry-picking ^

Finding evidence that undermines your cherished hypothesis can be deeply frustrating. But getting your point across on a biased selection of evidence is always a bad choice. Your credibility as a scientist is worth far more in the long run!

Critical discussion involves giving equal weight to evidence that does **not** support what you hope to establish. Putting your research question into the foreground NEVER justifies ignoring or downplaying evidence that suggests the opposite of what you believe.

This can be illustrated by a recent argument about the causes of hospital deaths between the British health minister and world famous astrophysicist, the late Stephen Hawking. Hawking, a champion of the British National Health Service, criticised the minister for ignoring evidence that undermined his case. His warning is eloquent:

> *Speaking as a scientist, cherry picking evidence is unacceptable. When public figures abuse scientific argument, citing some studies but suppressing others, to justify policies that they want to implement for other reasons, it debases scientific culture. One consequence of this sort of behaviour is that it leads ordinary people not to trust science, at a time when scientific research and progress are more important than ever, given the challenges we face as a human race* (Stephen Hawking, quoted in *The Guardian*, August 19, 2017, page number unavailable).

How much worse if scientist themselves engage in this practice! Finding evidence that undermines your cherished hypothesis can be deeply frustrating. But getting your point across on a biased selection of evidence is always a bad choice. Your credibility as a scientist is worth far more in the long run!

2.5 The writer's voice ^

Authors need to "authorize" themselves in their writing. To be a writer with recognized authority you must develop your own voice by making clear arguments and supporting them with focused evidence

Many textbooks and writing blogs tell us how important it is for writers to develop their own personal *voice*. Although this idea of the voice is very common, it is not easy to define. Some see a writer's voice as closely related to a personal writing style (fondness for particular words and expressions, use of a characteristic format, a certain "tone": bleak, optimistic, or ironic). Others see it as the perspective or critical lens a writer has in approaching topics. Still others think of voice as being a writer's ability to make the words come off the page as if the person was speaking.

Here is a useful explanation: "When people talk about 'voice' in academic writing, they usually mean that the reader can sense the presence of a writer controlling the message in the text" (Monash University, Research and Learning Online, Voice (n.d.). Although the term can mean different things, all the meanings boil down to two essential points:

1. No two writers express themselves in exactly the same way. To become a scientific writer you are expected to be a good critical thinker who is capable of making sound decisions. These must be explained in your writing in a credible manner. Each choice needs to be logically clear and supported by solid evidence. These decisions eventually will give you identity as a scientific writer. As writers become known, their voice becomes identifiable.

2. Developing a personal voice is fundamental to becoming an author. Authors need to "authorize" themselves in their writing. To be a writer with recognized authority you must develop your own voice by making clear arguments and supporting them with focused evidence.

3. The voice of an author is dependent on a particular context. As an author you must evaluate carefully the writing context you are working in and know its rules. Be sure to follow writing rules and conventions carefully. Within those limits, writers are free to develop their own unique voice.

2.5.1 Scientific writing and the voice ^

Always look for good examples of scientific writing: while reading search for effective titles, strategic ways of starting or ending a paragraph, elegant manners of being critical, etc. A good scientific author is always a good scientific reader!

We write differently and express different aspects of our personality according to the context.

The personality I am expressing in this written sentence is not the same as the one I orally express to my three-year-

> *old who at this moment is bent on climbing onto my typewriter. For each of these two situations, I choose a different 'voice,' a different mask, in order to accomplish what I want accomplished*." (Walker Gibson, 1966, cited in Nordquist (2017).

In comparing the voice with a mask, Gibson has highlighted something important about writing in general: there is no such thing as a "natural" or "neutral" way of writing. Different writing styles are associated with different conventions, or "genres" of writing. The scientific writer may think of her or his style as being objective. But the scientific style is no freer of conventions and rules than any other—in fact, it has many conventions and rules.

Often, the idea of the writer's voice is wrongly associated with what is called "creative" writing. This gives a false impression that a "voice" is absent from scientific writing. However, when writing in an "objective", "neutral or "impersonal" voice (so often associated with scientific writing), authors have to follow rules that *make* a text seem as such. Objectivity or neutrality is not "natural", but must be constructed carefully as any other kind of voice.

So, to repeat, scientific writing is just another writing genre, governed by its own conventions. You are required to master those rules and conventions effectively. In gaining fluency in that genre, mostly by imitating how others do it (and particularly those you most admire—this is where the personal element comes in), you develop your own voice as a scientific writer.

Always look for good examples of scientific writing: while reading search for effective titles, strategic ways of starting or ending a paragraph, elegant manners of being critical, etc. A good scientific author is always a good scientific reader!

Finding your own voice comes only with practice and experience. Most of us begin with preconceptions of what academic writing should be like. These preconceptions are part of our "naturalised" view of scientific activity. Importantly, critical thinking involves questioning them and looking for better alternatives. A critical stance involves reading critically and evaluating styles. For example, it is very common for an academic writer:

1. To use long and complicated words, as being more "serious" and scientific.
2. To write long, complicated sentences with many qualifying phrases to convey the full complexities of scientific statements.
3. To use many words, as more words "sound professional" compared to simple speech.
4. To use the passive voice to convey and represent scientific objectivity.
5. To eliminate all personal references by avoiding the use of "I" and "we".

Note that **each of these five writing practices represents a stylistic choice.** None of them are written in stone, "obvious", "natural" or inevitable. Indeed, a scientific writer may choose, instead, to adopt the following five guiding principles that directly question the preconceptions above:

1. To use short and simple words where possible, to aid understanding.
2. To write shorter sentences, to make an argument easier to follow and create greater impact.
3. To use only the number of words that are needed to make a point.

4. To use the active voice when appropriate to indicate actors' responsibility, animate the sentence and/or make its meaning clearer.
5. Not to be scared to use I or we when highlighting personal choices in the writing of the piece.

The above five principles, which we advocate in this manual, are equally defensible and legitimate. Both sets of principles are consistent with an academic writing style. Many online academic writing guides now endorse the second set of principles. See especially: statistician Kristin Sainani (Sainani, 2013), sociologist Howard Becker (Becker, 1986) and cognitive psychologist Steven Pinker (Pinker, 2014).

The debate on how academics write, and should write, is still very much open. The best advice for early career authors is to find out as much as possible about the writing style desired by your editors/evaluators (whether journal or university) and write according to this context. But at the same time focus always on making your writing as clear and coherent as possible, and using every bit of writing experience to increase your versatility as a writer. We urge you to think about this and make your own choices, taking into account your own purposes and context.

2.6 Expressing a stance ^

In academic writing at doctoral level, you are expected to critically discuss and reach your own conclusions about issues that arise in the literature. This is known as taking a position or expressing a stance. A solid stance is fundamental to building a credible voice in a text.

These conclusions rarely follow automatically from what you have just discussed. It is up to you to weigh the evidence, make the connections, and justify the conclusions. Most probably, someone else would make different points. So, convincing your audience depends on your ability to make a compelling case to back your argument.

Writers often take consistent stances in relations to controversies in their field, by which they come to be known. At this point, their "stance" on given issues become part of their "voice". As you read more widely in your field, you become aware of the stances adopted by key authors, even when they may not state them explicitly. This knowledge, the ability to "locate" contributors in terms of their stances, or key contributions to a field, is part of mastering the literature. Eventually, as you publish more, you too will become known for your stance or contribution.

This Cohort 1 CARTA author managed successfully to characterise the development of "frailty" models in statistics by neatly identifying the contributions of different researchers. Accounts like this reflect how science develops and are usually very interesting to read:

> *Vaupel (1979) was the first person to use the term frailty to refer to such effect in his paper where he was concerned with the efficient way to estimate the effect of frailty on mortality determinants. Klein(1992) showed how one can use the EM (estimatiom maximisation) algorithm to measure the random frailty effects in Semiparametric Cox*

PH models. Among other researchers, Ripatti and Palmgren(2000), Terneau et al.(2000), Rondeau et al.(2003) etc. showed that maximizing the penalised likelihood function in frailty models with a proper choice of frailty distribution yields better results than the EM algorithm. Furthermore, the fact that survival data can exhibit a natural grouping into clusters such as family, common exposure to the risk factor, geographic locations, etc. prompted the assumption that such data are correlated and hence violates the statistical assumption of independence. This attracted the attention of a number of researchers who introduced a shared frailty component (Rondeau et al.(2003)) such as spatial component (Leyland et al. (2000), Li and Ryan (2002), Banerjee et al. (2003),) into the linear component of the Cox PH model to account for such dependence in survival data.

2.6.1 Learning how to express a judgement ^

In making a judgement, you need to decide on the strength of your claims. Remember scientific writing is about creating new knowledge based on strong arguments and solid evidence. This is why being accurate about the degree of certainty is very important. Language provides us with many options in expressing a stance, from the tentative to the conclusive, from the self-effacing to the assertive, and by using rhetorical devices, such as rhetorical questions and irony. Here are some examples of language suggesting the strength of statements.

Tentative: *possibly, maybe, perhaps, could be considered, not unlike, virtually, generally,* etc.

Conclusive: *definitely, undoubtedly, conclusively, absolutely, quite right/wrong, certainly*, etc.

Self-effacing: *might be considered, shared by this author, worthy of consideration*, etc.

Self-assertive: *I find unacceptable, to my dismay, in my opinion, in my view, which I find…, with which I disagree*, etc.

Be responsible. You don't want to make statements that you can't back up, or are easily challenged. However it is important to be clear. "Hedging" is when writers use noncommittal or vague language as a way of being cautious. It is very common in scientific writing. This is a sensible precaution, but excessive use of "hedging" gives the impression that you are uncomfortable about saying anything clearly and definitely. The result is a weak voice. To avoid this, you should be willing to stand up and be counted when you make a judgement or assert something you are confident you can support. Here are some examples of typical hedging phrases:

It could be the case that, it might be suggested that, it may be said that, apparently, in part, predominantly, partially, very possibly, widely alleged to be… etc.

It's not that hedging is *necessarily* a bad thing. As Steven Pinker puts it:

> *A scholar who is proposing a hypothesis must go on the record with it in as precise a form as possible at least once so that critics can see exactly what he is claiming and give it their best shot…It's not that good writers never hedge their claims. It's that their hedging is a choice, not a tic.* (Pinker, 2004)

MODULE 3:
CONCEPTS AND CONCEPTUAL FRAMEWORKS

BACK

3.1 The importance of concepts ^

A concept is a mental abstraction that represents in *one or more words* a general idea or a thing.

Concepts bring order and differentiation to our world, they allow us to name, organise, analyse and manipulate it.

Science is about knowing and understanding reality and being able to do something with it to improve the quality of life of ourselves and others. To do science we have to be capable of differentiating objects and events and placing them in different categories. Concepts are necessary to explain what features define things such as objects, categories or processes. Indeed, to be able to describe complex ideas we must rely on our grasp of concepts. This is why an awareness of their role in the construction of scientific theories is an essential part of scholarship. Hence, scientific writers must inevitably write about them.

3.1.1 What is a concept? ^

A concept is a mental abstraction that *represents* in one or more words a general idea or a thing. It is not the thing itself. Think of a concept as a filter that we use, often unawares, to "make sense" of raw experience. Without this power to abstract and organise humans would have only their instincts to protect themselves against a threatening environment. Concepts bring order and sense to our world; they allow us to name, organise, analyse and manipulate it.

At the bottom of the diagram below, the abstract image of a tree can represent the concept "tree", thereby representing broadly the category of all trees in the world. All human beings would probably agree that the image is valid as a general representation of the idea "tree".

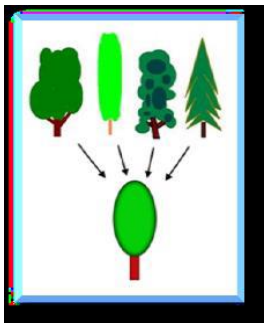


Image from
https://en.wikipedia.org/wiki/Concept

Indeed, the concept "tree" allows us to grasp and name the general idea of a tree. What else can a concept do? Concepts allow us to differentiate the reality we perceive.

For instance, should the tall plants below be called trees?

Source: i.pinimg.com.

Even though some are tall, these plants are bushes. A bush is different from a tree, but is its height that makes it different? There are bushes that are as tall as trees, and trees that are as low as bushes. So what *does* the difference consist of? This is where definitions come in handy, as they allow us to name and organize reality consistently according to our shared purposes.

Indeed, so that we don't get confused and we know that we are referring to the same thing, all concepts must have definitions that include these key differentiating features. Definitions must be precise. For science, agreement on definitions is fundamental. Be sure to quote all your sources for definitions as they are nearly always attributable to a source.

When we use the concept "public health", for example, we know there is more than one way of thinking of and defining it. In 1920 Charles-Edward Winslow defined it as:

> *…the science and art of preventing disease, prolonging life and promoting mental and physical health and efficiency through organized community efforts for the sanitation of the environment, the control of communicable infections, the education of the individual in personal hygiene, the organization of medical and nursing services for the early diagnosis and preventive treatment of disease, and the development of social machinery to ensure to every individual a standard of living adequate for the maintenance of health, so organizing these benefits as to enable every citizen to realize his birthright of health and longevity (*Winslow, 1920).

Since this early definition, later adopted by the World Health Organisation, was formulated, much has changed. For example, the definition makes no reference to combating risk behaviours such as unprotected sex and drug use (it refers only to personal hygiene) or other behavioural problems such as non-compliance with treatment (both now major concerns of public health intervention). Furthermore, the WHO's definition of health, since it constitution in 1948, as "a state of complete physical, mental and social well-being and not merely the absence of disease and infirmity" has itself been widely criticised as subjective, and lacking operational value. Debate over the usefulness of the definition under modern medical and social conditions continues (Huber et al, 2011).

3.1.2 Naturalised concepts ^

> **In reviewing science we must not fall into the trap of naturalising concepts; we must remember that they are constructs. Treating them as if they were self-evident or natural truths leads to "blinds spots", in that concepts can conceal as much as they reveal.**

It is important to be aware of the concepts you are using, and their limitations. We use some concepts so frequently that we forget they are abstractions and treat them as if they were natural, part of the material world: they become "naturalised". In reviewing science we must not fall into the trap of naturalising concepts; we must remember that they are constructs. Treating them as if they were self-evident or natural truths leads to "blinds spots", in that concepts can conceal as much as they reveal. This was the point that Karl Marx made, back in the 19th century, when he

tried to show that the concept of the free market in classical economics obscured the underlying relationship of capital and labour.

3.2 Critical reading ^

Become a *critical* reader. In reading the work of other authors be alert to statements that are based on unexamined postulates. Be critical of claims that that are made to seem "natural" or "self-evident" that while appearing to be universally true in fact reflect a partial world view. The capacity to detect these "blind-spots" or "traps" is known as "critical reading". As an advanced scholar you are expected to master this kind of reading. Make sure your writing demonstrates that you possess this competence.

For example, when summarizing and commenting on a scientific article, be sure to address the following:

- **Question "naturalized" concepts or definitions.** The way writers pose research questions often reflects routine unexamined postulates. While represented as universal these actually may reflect the experience of a particular cultural world view. Consider, for example, the consequences of adopting a universal definition of "old age", when life expectancy in some countries is much higher than in others.

- **Search for inconsistencies or inadequacies of concepts.** Science changes when an innovator shows that established concepts are increasingly inconsistent with the facts or no longer reflect what they claim to reflect. The physicist Thomas Kuhn referred to this phenomenon as a **"paradigm shift"** (Kuhn, 1962). For example, in what ways did the introduction of the concept of health-related quality of life (HRQoL) change our understanding of public health beyond what we know from statistics of morbidity and mortality?

- **Be aware of the history of your discipline**. By studying the history of your own discipline you should be aware of innovations that have redefined the explanatory frameworks within which researchers work. Disciplines vary in how well established their paradigms are and tend to naturalise concepts as well. As a critical thinker and reader you must be aware of this.

- In the quantitative sciences they tend to be firmly established, and scientists can research and publish without needing to worry too much about underlying concepts. Kuhn called this "normal science". The opposite extreme is sociology, a science historically divided by several competing paradigms.

3.2.1 Tips for critical reading ^

1. Be an active, strategic reader: identify what you are looking for, and ask questions about the concepts used in the text. If something does not leave you satisfied, then continue to investigate and form your own opinion.

2. Make lists of concepts by author or field that are important to your research and organize them into coherent schemas.

3. Make sure you have found and read the texts and classic and contemporary articles that define and discuss the concepts you are using.

4. Take into account the historical, social, cultural and political context in which the research and the text are written. Ask yourself whether the context impacts in any way on how concepts are used and/or defined.

5. Take note of any reaction you have to the concepts and definitions of the text. You also bring concepts naturalized by your tradition and beliefs. Ask yourself how they impact your analysis and research.

When writing your doctoral literature review chapter, remember to: clearly identify the key concepts that are fundamental to your research problem. Be sure to state your choice of DEFINITION and JUSTIFY/ EXPLAIN through the discussion why you chose/arrived at that definition.

3.3 Conceptual frameworks ^

In a PhD thesis, writers must examine the conceptual and theoretical basis of their research. This helps the reader see how the author's research relates to existing knowledge of the subject.

Scientific explanations involve key factors, concepts and variables that relate to one another in determined ways. A **conceptual framework** is a visual or written product that represents and explains these relationships. It is a "tentative theory of the phenomenon you are investigating" (Maxwell, 2005)

3.3.1 Why is it important to discuss your conceptual framework? ^

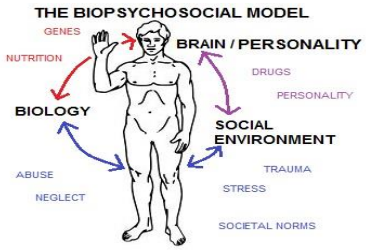
- It is like a map of your research project. It helps you define your objectives, formulate research questions, design your methodology and identify the events that would contradict your hypothesis.

- It speaks of your stance, this is your own selective perception of the phenomena you are studying. This in turn suggests distinct measures to solve your problem.

- Last but not least, **discussing concepts critically shows mastery of your field.**

Example: **the socio-ecological model vs. the behavioural approach**.

We can conceptualize problematic behavior such as domestic violence or sexual risk behavior in terms of the family, neighborhood, community, and society, rather than solely as a problem of individual conduct. At each level, the way we conceptualize the problem will suggest different preventive strategies. For example, rather than treat domestic violence as deviant behavior, maybe it would be better to address the gender values that encourage it, or focus on protection at the neighborhood level.



3.3.2 What are the sources of your conceptual framework? ^

You should reflect on the concepts and values you take for granted. What are their origins? Here are some of their sources:

- **Your own knowledge and experience as a participant or practitioner (primary knowledge)**. This is what you know without necessarily knowing that you know it. It is the knowledge you possess from the social context in which you grew up, live and work. This knowledge is a common ground in your field. If there is anything that is not self-evident or is likely not to be shared, then be sure to discuss it with literature references.

- **The empirical and theoretical literature (secondary knowledge)**, including the theoretical contributions of previous scholars who have tackled problems similar to your own. This is the knowledge you have learned by studying. How much consensus there is on the use of concepts in your field is a matter of degree; absolute consensus is very unlikely. Therefore, it is necessary to discuss these concepts skillfully.

- **Ideas from other sciences and disciplines (also secondary knowledge) are** important in public health. Apart from the medical sciences and epidemiology, concepts from demography, statistics, and sociological concepts such as “stigma” or roleplaying, and gender studies, for instance, need to be thoroughly reviewed and discussed critically.

3.4 Concept maps ^

The concepts underlying your research can be expressed graphically in a "concept map". This is similar to the mind map we discussed in Module 2. The main difference is that concept maps can be used to represent complex relationships between different concepts and usually have a tree-like, as opposed to a radial structure. For a summary of the differences, see (The mind-mapping software blog, 2016).

3.4.1 What is a concept map? ^

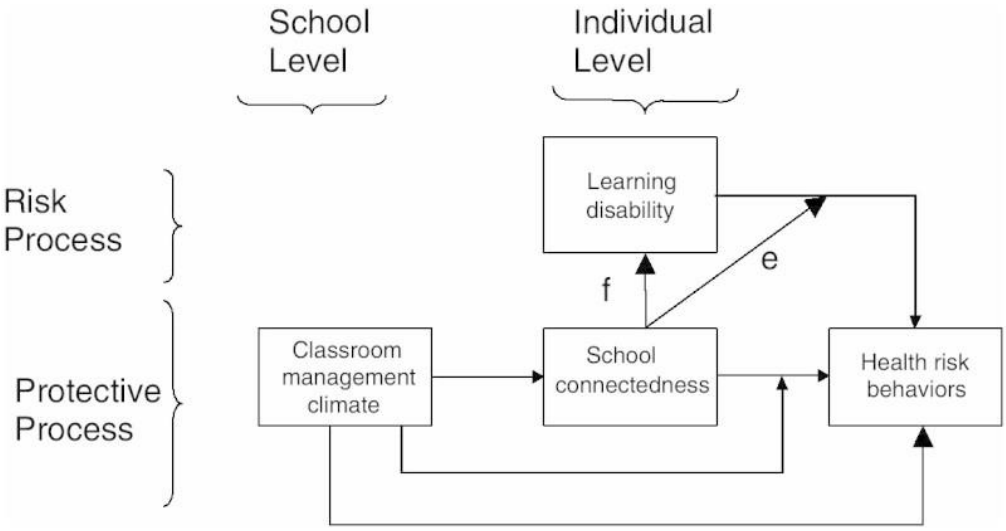
A concept map is a tool for graphically depicting a conceptual framework, showing the major concepts or variables and the relationships between them.

- It normally consists of boxes or circles representing concepts or variables and lines or arrows connecting them.
- It is tentative and exploratory.
- Concept maps can help you see the implications of your theory, its limitations and unexpected connections.

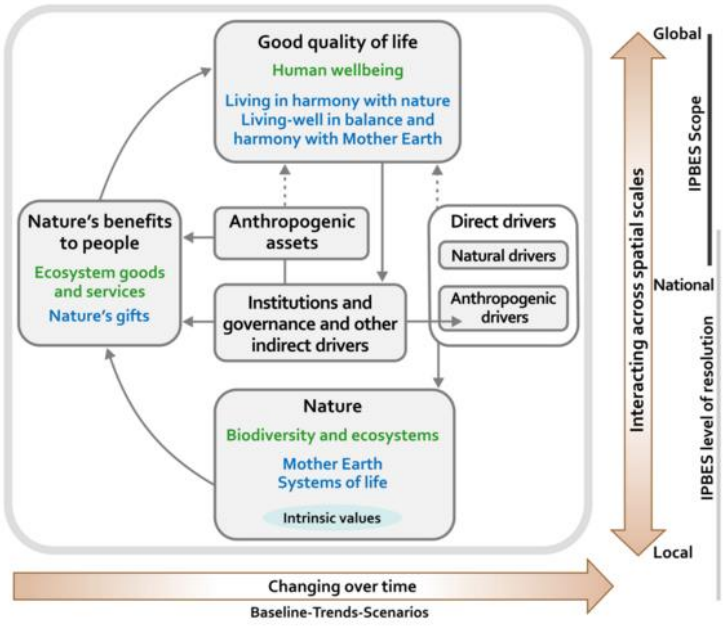
Concept maps are useful to:

- Clarify your thinking, suggest ideas about what contributes to and affects the phenomenon you are studying, how variables affect one another, etc.
- Brainstorm with colleagues or demonstrate a hypothesis with students
- Show the reader graphically how your explanatory scheme works.

Examples of concept maps:



Protective buffering process (adolescent vulnerability, risk and protection).
Source: Blum, McNeely, and Nonnemaker (2001).



Source: The IPBES Conceptual Framework — connecting nature and people (2015).

3.4.2 Requirements for using concept maps ^

- Concept maps in a PhD dissertation **MUST include a verbal explanation** of the concepts and their relationships. You must "walk" the reader through the diagram step by step.
- Be sure to **acknowledge concept maps reproduced or adapted from others' work** with references and page numbers.
- Even if you develop your own concept map, it must **acknowledge all elements or inspiration you have got from other sources**.

This brings us to the importance of scholarly integrity and how good writing is inseparable from responsible writing.

3.5 Citation, plagiarism and how to beat it ^

3.5.1 The importance of correct citation ^

Academic texts differ from all others in being full of citations of other writers' work. Citations—such as the name of the author and a date, placed in parentheses in the text, together with a detailed list of references at the end that allow a reader to obtain the precise information they need to check your source—help establish your credibility and accountability as an author. Among their functions are:

- They show the reader that the arguments or information you discuss have not been plucked from the air but can be found in previously published work.
- Citations give credit to authors from whom you have drawn information or ideas.
- Citations can give the weight of authority to your arguments.

For these reasons, in our workshops we insist that authors source their writings profusely. You should aim for at least five citations per paragraph. But you must make sure that the citations are pertinent.

3.5.2 Authorship and integrity

Intellectual integrity is inseparable from the concept of authorship. As an author, you claim responsibility for your work, which entails credit for what you have accomplished as well as accountability for its defects or shortcomings.

Today, in 2018, scientific values, intellectual honesty, and truthful reporting are more important than ever. They are by no means secure and are at constant risk of compromise from many sides. As public health scholars writing in English, you are engaging in a global conversation. It is your responsibility as scientists to embrace and defend these values.

Intellectual integrity is inseparable from the concept of authorship. As an author, you claim responsibility for your work, which entails credit for what you have accomplished as well as accountability for its defects or shortcomings. Authorship "conveys significant privileges, responsibilities, and legal rights. It forms the basis for rewards and career advancement in academia" (Israel, 2017). According to the International Committee of Medical Journal Editors (ICMJE, 2017) four conditions need to be met for recognition as an author:

- Substantial contributions to the conception or design of the work or the acquisition or interpretation of data;
- Drafting or critically revising the text;
- Involvement in final approval of the work for publication;

- Agreement to be accountable by ensuring that questions about the accuracy or integrity of the work are appropriately investigated and resolved.

It would be a breach of authorial integrity for a researcher to allow their name to be added to a list of authors without meeting these criteria; to engage a third party to do their writing for them; to engage a third party to submit an article on their behalf; to engage third parties to revise the content of their document, and to falsify the names of peer reviewers they suggest to the editor. Cases of fabrication and falsification by local researchers like those above led the Chinese Association for Science and Technology (CAST) to publish 5 codes of conduct for authors publishing in international journals:

1. Do not engage a third party (defined as any individual or organization other than the author) for ghost-writing services. Researchers should be the bona fide authors of their papers based research conducted by themselves with real experimental data.
2. Do not engage a third party to submit a paper on the author's behalf. Researchers should have a sound understanding and clear knowledge of the submission process for international academic journals, and are responsible for the direct submission of their own papers and subsequent feedback engagement with the reviewers.
3. Do not entrust third parties to revise the content of authors' papers. Researchers can engage the services of third parties to proofread and refine the language based on the original content that authors develop. Third parties should not be engaged to revise research content in the guise of proofreading or language refinement.
4. Do not engage in identity fraud and/or falsify information of author-suggested reviewers. Researchers have a responsibility to ensure that the identities and contact information of all suggested reviewers are real when required by the journal editors. Researchers should not engage in fraudulent behavior of or manipulate the peer review process.
5. Do not violate the ethical standards and responsibilities required of authors. Authors should review their articles and agree to publish their papers prior to submission. All researchers that are named in an article must have contributed substantially to the research (Chan, 2015).

3.5.3 The dangers of plagiarism ^

A more common breach of authorial integrity is **plagiarism:** using other people's ideas, information, language, sound, or imagery in your writing without proper acknowledgment. In their rule books many higher education institutions in the United States define plagiarism as the "appropriation, buying, receiving as a gift, or obtaining by any means another person's work and the unacknowledged submission, use or incorporation of it in one's own work" or similar language. This is a serious breach of academic ethics, and is treated as such by all credible academic institutions, including CARTA.

Because it is severely sanctioned, plagiarising can seriously damage, if not end your career in academia. More troubling still, you don't need to be deliberately dishonest to commit plagiarism. In many cases it is unintentional: a result of careless writing habits, laziness, or just ignorance of the rules. But, ignorance is no defence if you are called out for plagiarism. This why it is essential to make sure you understand clearly its different forms and how to avoid them.

In the academic world, frequency of citation is regarded as a measure of an author's credibility and importance in their field. If you copy ideas, language, or information without acknowledgement you prevent the true author from gaining credit for their work. Your failure to acknowledge the author means that other writers may cite *you* as responsible for it, so essentially you are stealing credit.

Apart from **honesty and natural justice**, there is a deeper reason for rejecting plagiarism. If we don't recognise responsibility for ideas—if we treat them as one big mishmash "out there" which we can draw from at will—we undermine some essential principles of intellectual integrity:

First of all, we are undermining **accountability**. Being accountable means being responsible for what you write, both the good and the bad. How could we be held accountable if there was no tracking system to identify the true authors of a research? Or if the system was flouted so frequently that it could no longer be trusted?

Second, we are discounting **historical memory**. Science, indeed all intellectual activity, is reflexive, that is, able to reflect on itself and its history. How could science progress if it were impossible to track its development over time, if we were unable to determine who, or what institutions, contributed what?

So, please remember: compliance with the rules on plagiarism is a strict rule of the CARTA program.

3.5.3.1 What is plagiarism and how to avoid it ^

As summarised here by Yale University, plagiarism is usually found in one of three forms,:

> "…using a source's language without quoting, using information from a source without attribution, and paraphrasing a source in a form that stays too close to the original" (Yale Center for Teaching and Learning, 2012).

Using a source's language without quoting ^

The Internet is now the source of the vast majority of information used in research. In particular, the Word copy/paste function enables us to do things with words that were impossible in the pre-computer age, such as seamlessly integrate other people's language and thinking into our own work. Beware of this!

Never copy-paste language that is not your own and join it up with your own writing in the hope that no-one will notice! The Internet is now the source of the majority of information used in research. In particular, the Word copy-paste function enables us to do things with words that were impossible in the pre-computer age, such as seamlessly integrate other people's language and thinking into our own work. This creates a "mosaic" (Martin and Ohmann, 1963): you jot down snippets from articles as you read, and then, without using quotes or acknowledgments, join them together as if you had written them yourself. If you find this tempting at times—especially when you are struggling with a deadline for an assignment—never do it!

Whenever you quote word for word from a source or copy parts of a source's language, you must do two things:

- Place the **quoted passage in quotation marks**, or **indent** the passage so that it is clearly distinguishable from your own writing. Indent if the quotation is longer than 40 words, omitting quotation marks. This is called a "block quote".

- Give the reader access not only to the reference, but also to the **page number** of the quotation. How you do this will depend on the referencing style used. In the APA or Chicago author/date style, you can put the page number in the parentheses as in: (Johnson, 2009, p.24), or place it close to the quote in a separate parenthesis (p.24).

Quotes from documents uploaded to Internet pages can present difficulties, as they frequently do not have page numbers. The best plan in such cases is to see, first, if you can obtain the quote from a version published in print. If this is impossible you should admit that you have tried but failed to find a page number, and provide the fullest possible information on the online source in your list of references, always including the URL, and the date you retrieved the information from it.

Using information from a source without attribution ^

This is a very common form of plagiarism. Writers may omit acknowledgment of the source for information or an idea, or they may misattribute it. Getting citations right often takes time and effort. Many people "caught" plagiarising probably became tired and said to themselves "well, no one will notice!"

References *must* be accurate. An ethically responsible author is required to ascertain that all references used in a work are true, and reliable. If they are not, readers may be unable to trace the real source of your information. If you misattribute information or provide insufficient details to trace it, you may be committing plagiarism. The Internet is full of quotations that are unattributed or misattributed. Always make sure that the citation you give is to the original book or article, not to one of the many sources who quote from it.

Follow the citation style of your institution. Academic journals, university faculties and research institutes will normally require or recommend one of several possible styles for citations, reference lists and bibliographies. **The most commonly used are:**

APA (American Psychological Association): Author and date are placed in the text in parentheses. Full information on the source is obtained by looking up the author's name and date in the reference list at the end of the article.

The **Harvard** style is similar: APA and Harvard are mainly used **in the social sciences and humanities.**

MLA (Modern Language Association): mainly used in the **humanities**, especially in the USA.

Vancouver: this is a numbered citation style commonly used in **medicine and science**. A number in parentheses in the text is the number assigned to the publication in the sequentially numbered reference list at the end of the article.

Chicago: this style has two variants; notes and bibliography, or author/date. Used in many disciplines.

In the n*otes and bibliography* variant, a raised (superscript) number is placed in the text, and the full information on the source can be found in a numbered list of endnotes. Sources are also usually listed in a separate bibliography.

In the *author/date* variant, the author and date are placed in parentheses in the text, and the full information on the sources can be found in an alphabetical reference list at the end, similar to the APA style.

Publishers and university departments like to stick consistently to a single style. For any writing project, find out in advance which style to use, and use it consistently. Never mix citation styles. Whichever style you use, it is important to **place your citation correctly** in the text. It should be

placed as close as possible to the particular idea, fact, or argument you are sourcing, so that the reader who wants to check your source can do so.

For further information on citation styles, see the links suggested in the Resources appendix.

Paraphrasing a source in a form that stays too close to the original ^

The best way to develop your writing (and voice) is to search for **your own words** to convey what the author in question is saying. In other words, you have to **paraphrase.** Note the emphasis on *own words*. This means you need to search for a new way of expressing the content you are interested in communicating to your readers.

Paraphrasing should involve transmitting the importance of the source writer's work, as seen through your own critical lens. What it is not, and must never be, is a way of disguising your use of another's language in order to conceal its source. That is plagiarism in a more subtle form, sometimes called "patchwriting" (Howard, 1992, 1995).

Beware of patchwriting. Patchwriting is paraphrasing that sticks too closely to the original language without acknowledging it. Here's an example:

ORIGINAL text:

"In this article, I want to explore interpretatively some of the ways rich youth in metropolitan India construct the sort of real and imaginary geographies that have been largely left out of the literature on globalization" (Saldahna 2002, p. 338).

PARAPHRASED text:

Saldahna (2002) examines **the ways rich** young people **in metropolitan India** build **the sort of real and imaginary geographies that have been** excluded from **the literature on globalization**.

The above is not a paraphrase, but a thinly disguised copy. The structure of the sentence is identical and it retains word for word one striking phrase, without quotation marks: "**real or imaginary geographies**". If the writer had acknowledged this as a quote by placing it in quotation marks with a citation and page reference, his analysis could have benefited from the insight—but without plagiarising the author and risking a reputation as a copier.

In this writing guide from the City University of Hong Kong (City University of Hong Kong (n.d.), the author uses Howard's 1995 article on patchwriting as a text, giving examples of unsuccessful and successful attempts to paraphrase it without committing plagiarism.

Patchwriting is easy to detect by reviewers. Plagiarised language is usually strikingly different from the style or tone of the rest of the document. It is not yours but someone else's voice. So avoid it.

As a general rule you should resort to direct quotation only exceptionally. Direct quotation can enliven a text if the language used by the source is particular striking, apt, or memorable. However, you will be often tempted to quote directly much more often than this, perhaps because you are insecure of your ability to write so "well" in your own words. Resist this temptation. Too much quotation inevitably makes a text look second-hand, a potted version of others' work in which your own voice is just not there.

3.5.4 How to avoid plagiarism ^

The best way to avoid plagiarism is to focus on developing your skills as a writer and your voice, by trying to express your thoughts in your own words. Always make sure that you have a personal input in the writing process. This is what makes you an author. Avoidance of plagiarism and improvement as a writer are part of the same learning process. The Yale University writing center expresses this very well:

> *Plagiarism is usually defined as a discrete offense, a specific failure to give credit to a particular source. But it actually raises a much more fundamental question for writers: "Where is my voice in this project?" Seen in this light, the strategies that help you avoid plagiarism can also be strategies that help you gain power as a writer. Once your guiding question about your relationship to sources is "Where is my voice?" you are well on your way to using sources in an effective and legitimate way* (Yale Center for Teaching and Learning (n.d., para 1).

Here are some specific tips:

- When reading, summarizing, paraphrasing, or taking notes on a given text, include a full bibliographic citation.
- Keep all previous drafts of your work. This will not only keep a record of your references, but will also protect you in the case that anyone steals your work.
- Highlight in yellow incomplete citations for future completion BEFORE SUBMISSION.
- Carefully proofread your work in order to check for unacknowledged sources and incorrect or incomplete citations. Allow time for this.
- Downloadable programs like Mendeley or Endnote, while not a substitute for actual referencing, can help to keep track of your sources.
- Use plagiarism detection software like Turnitin if your institution has it, before turning in a document or sending off a text for review. See the appendix for some suggestions.

MODULE 4:
BUILDING A TEXT:
TITLES, HEADINGS, AND SUBHEADINGS

BACK

Like a house, an academic text must have a solid structure.

You can see a house from far off and you know it is a house because of its shape and structure.

An academic text must have its own identity which is obvious at first sight from the text as a whole and in each of its parts.

4.1 The importance of structure ^

Academic texts are complex documents in which a mass of information and argument is analysed in order to reach conclusions that advance understanding, knowledge and/or technique. Their structure is the way in which this content is organized so that it can be read in sequence. By reading through the text, readers must be able to access the data and argument required to reach the conclusions in a logically coherent manner and with the least effort.

At the same time, specialists often read strategically, skimming over some sections of a document and focusing on the parts that interest them. If the sections of a document are given titles and subtitles, and there is a solid table of contents, selective reading is much easier.

In academia, such structures are mainly a matter of convention. Different conventions apply to journal articles from those that apply to doctoral dissertations, or other forms of academic writing such as books or review articles. In general, however, structure consists of the following hierarchically organised elements:

- Title;
- Sections;
- Subsections (and possibly sub-sub-sections);
- Paragraphs;
- Sentences.

In this module we will look at each of these elements in turn.

4.2 The title ^

The title of an academic dissertation or a journal article is a phrase or sentence that concisely summarises its contents, aim, findings and/or methodology. There are different kinds of title. Some are limited to a summary of key findings. Others mention the population or location, the research question, or the methodology. Still others are phrased in the form of a question. Very frequently a colon is used to divide the title into two parts, the first consisting of a brief description of the topic, and the second either the focus of the study, or the methodology used.

4.2.1 Examples of title styles: Obesity in Africa ^

To illustrate differences in title styles we searched the first four pages under "obesity in Africa" in Google Scholar. Titles divided by a colon were common. Here are two examples of titles in which the phrase after the colon describes the *methodology* of the study.

"Maternal obesity in Africa: a systematic review and meta-analysis" (Onubi et al., 2016)

"Effect of maternal obesity on neonatal death in sub-Saharan Africa: multivariable analysis of 27 national datasets" (Cresswell et al., 2012)

Here are two titles in which the phrase after the colon describes the *focus* of the study.

"Childhood obesity: susceptibility, cause, and management" (Dietz, 1983)
"Obesity in South Africa: challenges for government and health professionals" (Kruger et al., 2005)

Not all titles have colons. In the first four pages of the Google Scholar selection we found 17 with colons and 21 without colons. While most of the titles consisted of phrases, there were a few with full sentences such as:

"Abdominal obesity explains the positive rural-urban gradient in the prevalence of the metabolic syndrome in Benin, West Africa" (Ntandou et al., 2009)

Less commonly, titles may also be phrased in the form of a question. Here are two examples:

" Overweight and obesity in urban Africa: A problem of the rich or the poor?" (Ziraba, Fotso, & Ochako, 2009)

"Where does the black population of South Africa stand on the nutrition transition?" (Bourne, Lambert & Steyne, 2002).

Some titles have a "hook" at the beginning, a provocative phrase to spark the reader's interest. In the four pages we searched we found two of these:

"Fat, rich and beautiful: changing socio-cultural paradigms associated with obesity risk, nutritional status and refugee children from sub-Saharan Africa" (Renzaho, 2004)

"Hiding in the shadows of the HIV epidemic: obesity and hypertension in a rural population with very high HIV prevalence in South Africa" (Bärnighausen et al., 20017).

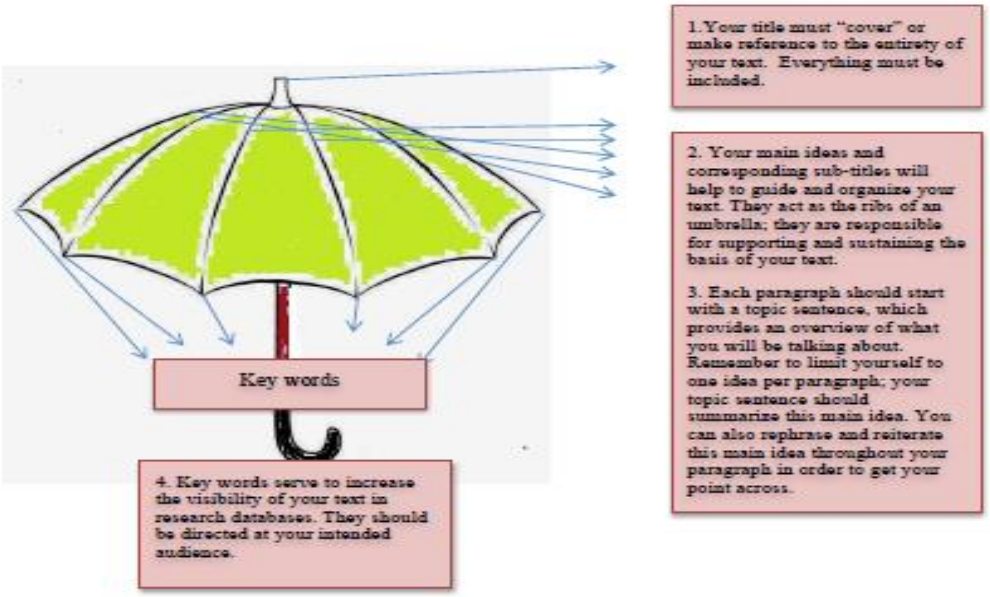
The brief search we conducted in Google Scholar shows a wide range of title styles from which authors can choose. Even the length was highly variable, ranging from 3 words to 32 words. So what criteria should we use in creating an effective title? To answer this, we need to consider the functions of a title.

4.2.2 Functions of the title ^

The title's main function is to represent the dissertation or article to potential readers. Think of it as a compressed version of the abstract. It is clearly of the utmost importance, then, that the title accurately summarises what is in the text.

If the dissertation or the article is like a house, with a defined structure and identity, the title could be compared to the roof, the element that is visible from above, fits the contours of the structure and protects everything within it.

Another way to think of the title is the tip of an umbrella, from which emanate ribs that represent the key topics and arguments of your study. Like the tip of an umbrella, the title must cover or make reference to the entirety of your text.



Never forget that the title is your work's calling card. A good title should concisely summarise what you consider your study's key contribution to knowledge, and what is most likely to attract readers. Today, more and more people use digitalized databases to find and select relevant literature. So, the title can increase or diminish the chances of your article being found, selected and cited. Use words in the title that will direct the readers you want to attract to your article: researchers with a shared interest who are likely to cite you in their own work.

4.2.3 How to create a good title? ^

Start by making a simple sentence out of the different elements of your study, such as:

- Topic;
- Findings;
- Study population;
- Country;
- Methodology;
- Conclusions.

Decide the basic format you will use for your title, such as a descriptive title with colon, a statement of the results, or a title in the form of a question.

It's very unlikely you will be able to fit **all** of the above listed elements in your title. You will probably need to judge what are the key elements for publicising the kind of study you are doing, and omit other elements. All unnecessary detail must be cut, particularly empty phrases such as "a study of" or "the relationship between".

Cut down your sentence or to its most important elements, aiming at 12 words as a guideline. Try variations of the words for order, rhythm and punctuation until you find the best combination of phrases for your title.

Try out the title on colleagues and consider suggestions for improvement. If your manuscript is aimed at a particular journal, analyse and imitate the title style, if there is one.

Academic titles don't have to be boring. Sometimes a short "hook" at the beginning can kindle expectations of a good read. This is common in literature and cultural studies, review articles and opinion pieces. However, do not use words that are not readily understandable to a wide and culturally diverse readership. And remember: an ideal title is not more than 12 words.

The process of creating a good title is a work in progress. Starting from a draft, you change and adjust it by trial and error until it covers all the key information and is attractive. As you work on your dissertation or article and its focus becomes sharper, you may need to change the title. See the Resources Appendix for some useful links on creating titles.

4.2.4 Keywords ^

Search engines, journals and indexing services use keywords in order to track and classify publications digitally so that potential readers can find them easily. To maximise your chances of getting your work into the public domain you need to choose with care 5-8 suitable keywords. Keywords should refer to elements of your work that describe it and distinguish it from others, such as the exact topic, the location or population studied, and the methodology used (if unusual). If you are sending an article from your research to a journal for publication, then you need to check to see if they have guidelines for keywords. Some journals specify that you should not give keywords that are already in your title.

Choosing the right keywords is important, and doing it in a hurry, by guesswork, or without much concern could be a grave error. We reproduce here some tips from *Editage*, an excellent website for non-native English-speaking early career researchers.

- Read through your paper and list down the terms/phrases that are used repeatedly in the text.
- Ensure that this list includes all your main key terms/phrases and a few additional key phrases.
- Include variants of a term/phrase (e.g., kidney and renal), drug names, procedures, etc.
- Include common abbreviations of terms (e.g., HIV).
- Now, refer to a common vocabulary/term list or indexing standard in your discipline (e.g., GeoRef, ERIC Thesaurus, PsycInfo, ChemWeb, BIOSIS Search Guide, MeSH Thesaurus) and ensure that the terms you have used match those used in these resources.
- Finally, before you submit your article, type your keywords into a search engine and check if the results that show up match the subject of your paper. This will help you determine whether the keywords in your research paper are appropriate for the topic of your article (Editage, 2013)

Here is more advice, on the same lines, from the academic publisher Taylor and Francis:

> When you submit your article you'll need to include keywords. These will be used to index your article on Taylor & Francis Online and on search engines such as Google Scholar™. These keywords will help others find your article quickly and accurately, so think of them as the labels for your article. What's more, a strong correlation exists between online hits and subsequent citations for journal articles.
>
> But how do you choose your keywords? Think about how you search for articles, and what words or phrases you put in. Then think about your own article, and what keywords are most relevant to the focus of your work. Once you've drawn up a shortlist, try searching with them, to ensure the results fit with your article and so you can see how useful they would be to others.

Narrow down your keywords to ensure they are as accurate as possible, and then ensure you also include them in your title and abstract (as some search engines only index these), whilst still making it readable (Taylor and Francis Author Services, n.d.).

You can find these resources, and more, in the Resources Appendix.

4.3 The sections ^

Every good text makes strategic use of sections. Sections help us find our way through the text and to see at a glance where the argument is going. Every section has a title, or heading.

Gargrave stepping stones. Wikimedia Commons.
https://www.google.com/search?tbm=isch&source=hp&biw=1006&bih=584&ei=-FmdWs2tM6np_Qbbj72YAg&q=stepping+stones&oq=stepping+stones&gs_l=img.3..0l10.2931.6508.0.6930.16.11.0.5.5.0.29.141.7.7.0....0...1ac.1.64.img..4.12.170.0...0.9y4_16O3__w - h

Sections are like stepping stone that help you cross from one bank to the other. Each stone should let you hop from one main point of your argument to the next and so on until you reach the far bank (the conclusions).

In the literature review (LR) chapter of a doctoral dissertation, sections can be divided into two types:

- Those that are common to most literature review chapters, such as the Introduction, Research Gap, Concepts and Conceptual framework, Methods, and Conclusions and/or Discussion.
- Those that deal with **themes** that are **specific** to the study in question and discuss how the research question has been dealt with in the literature, and relevant findings.

Apart from ensuring the internal coherence of the review chapter, sections are also useful to the reader whose interest is in a particular part of the review, such as the research gap and conclusions. Furthermore, they give the text cohesion, making sure it all fits together.

Sections need titles. Some are **template titles**, such as the "Introduction", "Discussion", and "References".

Some are **theme-based titles.** These must be constructed with the same care as the thesis title. They usually summarise the contents of the section, or its main argument. Or they may summarise key findings relevant to the research question. Make them simple.

Here is an example, from the work of a Cohort 7 CARTA fellow:

Thesis title: **Resilience and Service Use among Adolescents Living with Human Immuno-Deficiency Virus in Malawi: Implications for Adolescent Health Programmes**

Chapter title: **Literature Review**

Section titles:
- Introduction
- Research gap
- Concepts, definition and conceptual framework
- ***Themes***
  - ***Adolescence as a development stage and resilience***
  - ***Risks and protective factors***
  - ***Formal and informal sexual and reproductive health service and resource use***
  - ***Sexual and reproductive resilience***
- Methodology and resilience measurement
- Conclusions

Academic texts are constructed to be read sequentially from beginning to end, so the logical coherence of the narrative should determine the structure. Select a few articles and try reading only the main title, the titles of sections and sub-titles. This will help you appreciate the important role of sections and titles in making the text coherent, solid and credible.

When crafting titles of sections for your literature review chapter or article, you should progress from the general to the particular. For example, first of all should come how the study relates to previous work in the area, and in particularly the research gap it fills, as they are of prime importance. Also uppermost in the text should be the conceptual framework section as this will analyse the concepts used and the approach adopted to answer the research question.

Then, you should proceed to specific issues in the "theme" sections, that deal with specific issues, findings, and methodology. Finally, in the discussion of your findings you review the major points of the chapter. While this is a general guide, to work out the best order you will need to "rehearse" in your head the argument you will follow.

What to avoid:

- Putting the conceptual framework at the end, so that it appears to be an afterthought. A rich conceptual discussion adds depth and reflexivity to your research. Put it near the beginning so the knowledgeable reader can locate your study and see where you are coming from.
- Confusing the purpose of the LR chapter Introduction with that of the Introduction to your thesis. The Introduction to your LR chapter should be quite short, and deal only with

explaining your purpose in the chapter, how you have structured it, and how you searched for and selected literature. **It is NOT the place for explaining the background and context of your research**. The latter belongs in the Introduction to your thesis.

4.4 Sub-titles or Sub-headings ^

Sub-headings obey the same principles as titles. They must condense the argument or information in a sub-section in a few words. Make them simple and short.

Analysing texts by theme, using appropriate sub-headings, will help you make your argument coherent, organize your thoughts, and simplify the writing process. In a literature review you will be analysing a large number of texts in succession. As we mentioned in section 2.4.6 of the manual, you should be wary of the "shopping list" syndrome (a disconnected succession of summaries with no unifying argument). Successive critical summaries of different studies can be bewildering and disorienting to the reader unless you use a thematic structure to make the analysis intelligible.

Using sub-headings has another advantage: you can write a text sub-section by sub-section, starting with the easiest first, avoiding the anxiety of plunging in with the big questions at the beginning. During this process, of course, you must ensure that all subsections are linked in a logical and flowing narrative.

Use numerals as well as titles to identify your sub-headings. The numerals should identify both the heading and the sub-heading: e.g.: 2.1., 2.2. 2.n., 3.1. 3.2, 3.n., etc.

The list of sub-headings is like a map of your text. Consistency of typeface, font and style in sub-headings is essential. Make it easy to follow.

Sub-headings obey the same principles as titles. They must condense the argument or information in a sub-section in a few words. Make them simple and short.

What to avoid:

Don't overdo sub-headings! Don't make your academic text look like a legal or policy document with scores of headings, subheadings and sub-sub headings all scrupulously numbered. This may look wonderfully organised, but it tends to put readers off! It also makes it more difficult to follow an argument. You are an analyst not a taxonomist!

4.5 Paragraphs: heart of the narrative structure ^

Paragraphs are blocks of text formed by various sentences that develop a single idea or argument. Each idea must be logically related to the idea of the preceding paragraph.

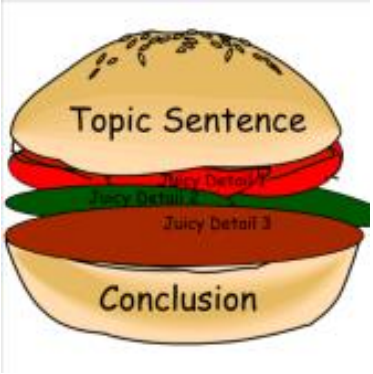
Paragraphs are separated by a blank line (or two) and are often indented as well. This gives readers a moment to rest their eye and helps them distinguish ideas, follow the argument, and keep their place in the text. A text without paragraphs or with overlong paragraphs is an effort to read and hard to remember. You need to start a new paragraph every time you introduce a new idea into the discussion, wish to discuss a new example in detail, or simply want to mark a shift in your focus.

Using paragraphs effectively is essential to building a coherent argument or narrative. Paragraphs should read "nicely" and be "well rounded" in their own right. Aim for **rhythm and INNER flow.**

4.5.1 How to write a good paragraph ^

Paragraphs are blocks of text formed by various sentences that develop a single idea or argument. Each idea must be logically related to the idea of the preceding paragraph.

Like the text as a whole, to be effective a paragraph must have a recognizable structure: a beginning, middle, and end. Think of it as made like a hamburger. The top half of the bun is your topic sentence: a broad, concise, and short statement of the idea developed in the paragraph (see below, 4.6); then comes the filling: several layers of argument and evidence to document, substantiate and develop the idea; at the end (the bottom half of the bun), comes your conclusion and a phrase linking to the next paragraph.

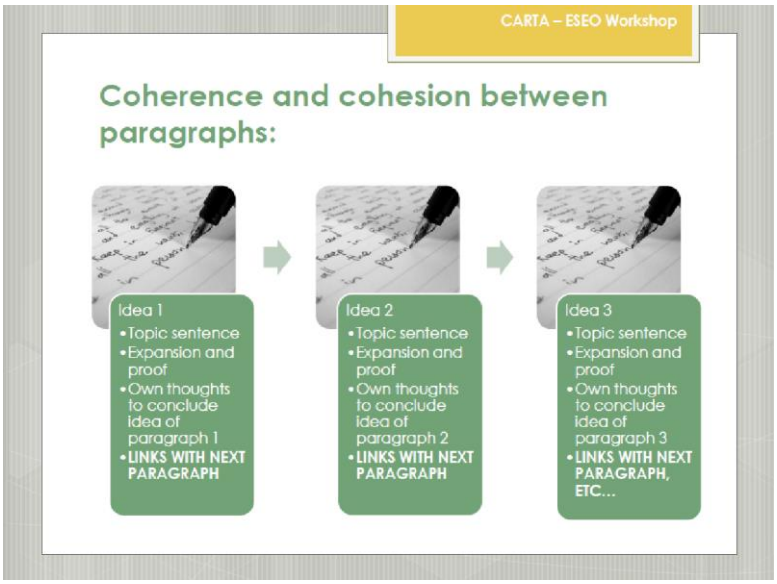


http://moziru.com/images/hamburger-clipart-paragraph-10.png

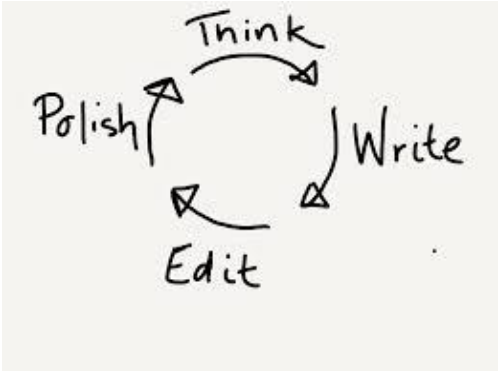
Here are some tips to follow:

- Base your paragraphs on the Hamburger model depicted above.
- The "meat" of the paragraph should consist of detailed evidence summarised from the literature and backed by references and a solid critical discussion.
- Focus on what is directly relevant to your research question.
- Pay attention to transitions in and out of your paragraphs. Use connectors (see Section 4.7 below).
- Keep paragraphs short (minimum 2 sentences, maximum 6). Journalists use one sentence paragraphs, but academics very rarely do. A longer paragraph doesn't matter as long as its followed by a shorter one, but not a one-liner.

If each paragraph is structured in this way, the text would look something like this:



Don't expect to write an excellent paragraph straight onto the page! Like any piece of text, a paragraph is produced in a process over time in a virtuous cycle that builds better and clearer meaning. The cycle may be repeated many times until the writer is satisfied.



The craft of writing-part 1. http://campusbuddy.com/craft-writing-part/

4.5.2 What to avoid ^

- **Too much detail, not enough argument (main idea).** The detail and evidence has to be in the right place, which is not in the opening sentence, but in the middle;
- **Don't wander away from the main idea**;
- **Don't introduce irrelevant information**. Focus on the main idea;
- **Don't bury the main idea in the text**. Don't make the reader dig for it! This idea or argument must be summarized clearly and concisely in the paragraph's opening sentence. This is called a **topic sentence**.

4.6 Topic sentences ^

A topic sentence is a simple and concise sentence that briefly summarises the main idea or point that is developed in the paragraph.

It is like a key with a tag that opens the paragraph, and tells us what can be found in it. Or it's like a compass or sign that points in the direction of the argument.

https://pixabay.com/en/key-tag-security-label-symbol-2114047/

A topic sentence is a simple and concise sentence that briefly summarises the main idea or point that is developed in the paragraph. It is like a labelled key that opens the paragraph, and tells us what can be found in it.

Topic sentences serve several functions at the same time:

- The indicate what the paragraph is about
- They are a bridge to the preceding paragraph and help ensure a smooth transition
- They reaffirm, develop, or qualify the argument
- They help the reader follow the logical thread

Here is an example:

Paragraph 1, final sentence: "***As can be seen**, the most recent data casts doubt on Makombe's conclusions*."

Paragraph 2, topic sentence: "***Indeed**, a careful review of the data suggests that Makombe's analysis has several **other** flaws*".

What does this topic sentence tell us?

- This paragraph will reinforce the conclusion of the previous paragraph.
- It will discuss more literature in detail that refutes Makombe.

There are two important words in this topic sentence that state the connection between the two paragraphs:

- **"Indeed". "**Indeed" is a connector that **reinforces** the point made in the previous paragraph
- **"Other". "**Other" refers back to the data analysed in the previous paragraph, and refers forward to further flaws we are about to identify.

4.6.1 How to write a good topic sentence ^

1. First, decide what the central idea of the paragraph is, write it down, and then convert it into a topic sentence. The idea must be clear, concisely expressed, and the sentence should be short.
2. Make sure that the sentence connects smoothly with the preceding paragraph, using an appropriate connector if it strengthens the flow.
3. Discard or relocate parts of the paragraph that do not contribute to the central idea.
4. Read through the previous and following two pages to make sure the argument or narrative flows and is coherent.
5. You need to start a new paragraph when you introduce a new idea into the discussion, wish to discuss a new example in detail, or simply want to mark a shift in your focus.

4.6.2 What to avoid ^

- **No topic sentences**. A common mistake in a literature review is to devote successive paragraphs to critical summaries of different studies without using topic sentences. The result is a "**shopping list**", a series of disconnected paragraphs with no momentum or direction.

- **Too much detail, not enough argument.** Topic sentences should make and strengthen your argument **before** you go into the detail. The purpose of the detail is always to

support an argument. It has to be in the right place, which is not at the top of a paragraph, but in the middle.

- **Too many words in the sentence**. Topic sentences should be crisp and short. Why? Think of the skimming eye of the expert reader wanting to get to the information fast. Concise topic sentences can help. If they have too many words they slow down the process.

- **Incoherence.** Writing a topic sentence that is not supported by or contradicts what the rest of the paragraph says.

You will find useful writing sites explaining topic sentences in greater detail in the References Appendix.

4.7 Connectors ^

Connectors relate one idea to another by stressing relationships such as similarity, contrast, exception, consequence, addition, similarity, and exemplification.

Connectors are words or short phrases that serve to link the opening sentence of a paragraph to the final sentence of the last one.

Examples of connectors: thus, indeed, in addition, moreover, however, consequently, in contrast, in this context, on the other hand, furthermore, etc.

Connectors relate one idea to another by stressing relationships such as similarity, contrast, exception, consequence, addition, similarity, and exemplification. (Study Guides and Strategies, n.d.). This makes them useful tools for building an argument.

However, useful as they are, connectors will not help if ideas (paragraphs) that succeed one another in a text do not follow logically.

4.8 Sentences ^

A sentence is the smallest unit of a text, but its construction according to the rules of grammar is very important. It's sometimes possible to make sense of an ungrammatical sentence, but it is an effort for the reader. In other cases, it's simply impossible.

But getting sentences right is not just a question of grammar. A sentence can be perfectly grammatical but too long, complicated, or poorly constructed. This also can make a reading a tiresome and frustrating experience!

English grammar rules can be easily found on the Internet and will not be discussed in detail in this manual. Useful links can be found in the Resources Appendix. We will only mention some of the essential grammar principles in the construction of a sentence, as even advanced students sometimes ignore them. Then we will look at some principles of good sentence construction.

4.8.1 Essential aspects of a sentence ^

A sentence must always begin with a capital letter and end with a full stop (a period in the United States), a question mark, or an exclamation mark. Sentences in a title have different rules. A title or subtitle that consists of a sentence has no punctuation at the end. As well as the first word, in book titles words in a title may also begin with a capital letter.

A sentence communicates a complete idea, and must contain a subject and predicate. The predicate is the part of a sentence or clause containing a verb and stating something about the subject. The predicate must ALWAYS contain a MAIN VERB and MAY also contain an object.

For example:

"Bolt won the race". is a sentence (Subject, verb, object).

https://www.dailytelegraph.com.au/sport/olympics-2016/the-10-fastest-men-in-olympic-100m-history-usain-bolt-tyson-gay-yohan-blake-justin-gatlin-et-al/news-story/18535784a5cb6271bcf795cee9d16ec4

"Bolt won". is a sentence (Subject, verb, no object).

"Bolt the race". is NOT a sentence. (Subject, object, NO VERB)

"Bolt winning the race". is NOT a sentence (Subject, NO MAIN VERB. "Winning" is not the main verb, but is part of the subject.

"Bolt winning the race made me happy". is a sentence (Subject, main verb="made", object="me").

Just because a phrase is long doesn't mean that it is a sentence. Every sentence should have a thread or narrative running through it that gives it meaning and order, with a beginning, middle, and end.

4.8.2 Verbs, nominalisation, and the passive voice ^

Verbs are at the core of meaning. They move and communicate the action that a sentence is communicating. One could say that they are the "fountain of meaning". Indeed, well written English is rich in verbs. Unfortunately, academics tend to transform many verbs into nouns (nominalise them), which makes their prose sound more scientific, but also less vivid and alive.

Here is an example. Compare this sentence:

A team of scientists analysed the data in the lab before they wrote a report.

With this:

The analysis of data by a team of scientists in the lab was undertaken prior to the writing of a report. Example from: Cooper J., Queen Mary, University of London (2010).

In this example, the nominalisation of the verb "analyse" makes *the analysis* into the main subject of the sentence, rather than the real actor (*the team of scientists*). The tone of the sentence is impersonal, formal, and "scientific", as if what happened was a sequence of processes, rather than actions by scientists doing their job.

This brings us to a related issue in the above example, which is its use of the passive voice. In the second sentence the team of scientists did not analyse the data, an analysis of it was "undertaken" by them. Apart from being another nominalisation, this is a passive construction.

What does it mean to call it passive? In an active voice sentence the subject comes first, followed by the verb in the middle, and the object at the end, as in "Bolt (subject) won (verb) the race (object)". In a passive voice sentence the order is reversed: "the race (object) was won (verb) by Bolt (subject)". Note that the reader's attention focuses on the first word, in this case, the object. Two verb forms (was won) and a preposition (by) separate it from the subject. Coming last in the sentence, the subject's action and responsibility get less emphasis.

The formality and impersonality of the passive voice seem to fit the quality of scientific reasoning. This does **not** mean that the passive voice should be your default choice in scientific writing. Much

depends on the context. The passive voice is usually appropriate for passages that describe procedures, such as those in the methodology section of a dissertation, which in principle can be replicated by anyone who follows them, so that the identity of the actor is irrelevant.

The active voice is preferable in other contexts where agency and responsibility are important. Indeed, in the United States, many online writing guides and even the word processing programme Word frown on passive voice constructions. Word will put a squiggly line under every one you write, regardless of the context. And they are right—but only up to a point. It is true that active voice constructions, by stressing agency, make a text more alive and actions more personal, whereas passive voice constructions (especially those with nominalisations, like the example above) sound wooden, impersonal, and are longer and more difficult to read. However, as a general rule, the passive voice may be the obvious choice or may be preferable when:

- The actor is unknown;
- The actor is irrelevant;
- You don't want to commit to stating who was responsible;
- The emphasis is on the thing acted on;
- You are describing the methods followed in a study or experiment.

To resolve which voice to use, prefer the active voice unless the context in which the sentence appears suggests the passive voice is preferable (as in the cases listed above). If in doubt consult your academic supervisor, or check the style of articles in the journal in which you hope to publish.

4.8.3 Proximity of nouns and verbs ^

For easy understanding, the subject and verb need to be close together in a sentence. It is a grammar error to place a comma between the subject and the verb, as in this example:

Ethiopian runner Tamirat Tola, won the 10,000 meters at the World Championship in London.

If you must place a clause separated by commas between subject and verb, make sure it is not a long one. Although grammatically correct, this will make the sentence more difficult to understand and remember. Rearrange the order of a sentence to put the subject and verb as close together as possible. For example, you might rewrite this sentence:

Ethiopian runner Tamirat Tola, despite winning the 10,000 meters at the World Championship in London and collecting $20,000 in prize money, was disappointed at his failure to break the record.

Like this:

Despite winning the 10,000 meters at the World Championship in London and collecting $20,000 in prize money, Ethiopian runner Tamirat Tola was disappointed at his failure to break the record.

Or even like this:

Ethiopian runner Tamirat Tola won the 10,000 meters at the World Championship in London and collected $20,000 in prize money. Even so, he was disappointed at his failure to break the record.

4.8.4 Subject-verb agreement ^

Nouns and verbs must always agree. This is a fundamental aspect of making the text coherent and being credible as an author. "To agree" means that singular nouns must be followed by verbs in the singular; plural nouns by verbs in the plural. This may seem obvious on paper, but subject-verb disagreement is an extremely common grammar error in student writing.

4.8.5 Long sentences ^

Sentences that are long and complex, with many dependent clauses, make difficult reading. Try to avoid this by thinking up ways to make the same points by cutting words or dividing the sentence into two. Here's a wordy sentence:

The complexity and nuances of academic discourse often lead writers to qualify statements with conditional clauses that lengthen sentences and make them harder to follow. (25 words)

This could be shortened as follows:

Because academic discourse is complex and nuanced, writers often qualify statements with conditional clauses that lengthen sentences and make them harder to follow. (23 words, and it avoids the awkward phrase "lead writers to qualify statements").

You will notice a difference in tone between the two versions. The first is lofty, detached and remote—a stance that many scientists like to take through their writing—whereas the second is more relaxed, matter-of-fact, and *clearer*. Also, the second version makes "writers" the actor, whereas the first makes "the complexities and nuances of academic discussion" Into the actor. Much better a real life actor than an abstract one!

As an alternative, the sentence could be divided into two, as follows;

Academic discourse is complex and nuanced. (6 words) *As a result, writers often qualify statements with conditional clauses that lengthen sentences and make them harder to follow*. (19 words).

However, dividing sentences into two sometimes does not work. This is often because the original sentence loses its meaning if its two parts are separated. If the above version came at the beginning of a paragraph, the first sentence would NOT be a suitable topic sentence as it would make the writer think that the paragraph was about academic discourse, rather than writers' choices.

As a general guideline, sentences should have around 20 words and no more than 25 words. This is not an absolute rule, or course. You may find it difficult to avoid writing sentences much longer than this. If you do write a long sentence, try to follow it with a short one. You should avoid a string of long sentences, as they will most likely send your reader to sleep! Writing is like music in many ways: contrasting rhythms and tempos give energy and relief!

4.8.6 Reviewing sentence grammar ^

Nowadays, there is no excuse for turning in work with faulty grammar. The writing software most of us use, Word, has a free programmable grammar control function that should catch most errors. Word will also advise you on style issues. It will tell you if it thinks your sentences are too long, or you are using a passive voice, or are being verbose. Turn it off when you don't need it (that squiggly underlining can be annoying), but turn it on when you do. ALWAYS use it before turning in a text to supervisors, seminar coordinators, and above all, to publishers!

There are several reliable online grammar review services available (at a price) that will edit and correct your grammar errors for you. In the Resources Appendix you can find some suggestions if you wish to use a commercial grammar checking application (use at your own risk, as we cannot guarantee their accuracy).

4.9 Correction and evaluation rubrics ^

In commenting on and evaluating assignments ESE:O uses correction charts or rubrics that are closely based on the contents of this manual.

Rubrics are charts used for defining the requirements of an academic assignment and for providing a set of objective standards for evaluation and assessment. They are also helpful for students wanting to gage their own progress on an academic task.

While we try to be objective in assessing achievement of the aims of this writing course, please remember that there is a hidden element in writing, like any creative activity, that is difficult to measure or objectify. Often, great writers defy rules, sometimes deliberately. Many good writers are not even aware that they are obeying rules and much less what they consist of. Following the rules and principles advocated in this manual here will not necessarily turn you into an excellent writer. However, observing them will greatly increase your chances of becoming one. Rules are a great help when you are finding your way, and for teaching others. Once they are part of your repertoire and you can follow them without thinking—as good writers often can— then you can diverge and explore new paths of your own!

In Appendix 2 you will find an evaluation rubric that reflects the main lessons of this writing manual.

References

BACK

Bärnighausen, T. et al., (2008). “Hiding in the shadows of the HIV epidemic: obesity and hypertension in a rural population with very high HIV prevalence in South Africa” *J. Hum. Hypertens* 236-9. Title retrieved March 14, 2018, from Google Scholar https://scholar.google.com/scholar?start=30&q=obesity+in+africa&hl=es&as_sdt=0,5

Blum, R.W., McNeely, C., & Nonnemaker, J. (2001). Vulnerability, Risk and Protection. *Adolescent Risk and Vulnerability: Concepts and Measurement*. National Research Council and Institute of Medicine Board on Children, Youth, and Families; Fischhoff, B., Nightingale E.O., Iannotta, J.G., eds. Washington (DC): National Academies Press, Fig. 3-4. Retrieved March 7, 2018, from https://www.ncbi.nlm.nih.gov/books/NBK223737/

Bourne, L.T., Lambert, E.V., & Steyn, K.(2002) Where does the black population of South Africa stand on the nutrition transition*? Public Health Nutrition*. 5: 1a. Title retrieved March 14, 2018, from Google Scholar https://scholar.google.com/scholar?start=30&q=obesity+in+africa&hl=es&as_sdt=0,5

Campbell, D. (2017, August 19). Stephen Hawking blames Tory politicians for damaging NHS. *The Guardian*, page number unavailable. Retrieved from https://www.theguardian.com/science/2017/aug/18/stephen-hawking-blames-tory-politicians-for-damaging-nhs

Chan, J. (2015, November 19). China reins in on identity fraud over concerns of author, reviewer authenticity. Retrieved 26 February from https://www.elsevier.com/connect/china-reigns-in-on-identity-fraud-over-concerns-of-author-reviewer-authenticity

City University of Hong Kong (n.d.). The problem of plagiarism. Retrieved March 4, 2018, from http://www6.cityu.edu.hk/ah/plagiarism.htm

Cooper, J. (2010) Identifying verbs and their corresponding nouns. Queen Mary, University of London. Retrieved March 5, 2018,

from http://aeo.sllf.qmul.ac.uk/Files/Nominalization/Nom%20LOC.html

Cresswell, J. A. et al., (2012). Effect of maternal obesity on neonatal death in sub-Saharan Africa: multivariable analysis of 27 national datasets. *The Lancet* 380, 9850. Title retrieved March 14, 2018, from Google Scholar https://scholar.google.com/scholar?start=10&q=obesity+in+africa&hl=es&as_sdt=0,5

Díaz, S. et al. (2015) The IPBES conceptual framework—connecting nature and people. *Current Opinion in Environmental Sustainability*, **14. http://dx.doi.org/10.1016/j.cosust.2014.11.002 Retrieved March 7, 2018, from** https://www.sciencedirect.com/science/article/pii/S187734351400116X

Dietz, W.H., (1983). Childhood obesity: susceptibility, cause, and management. *Journal of Pediatrics*. Title retrieved March 14, 2018, from Google Scholar https://scholar.google.com/scholar?start=30&q=obesity+in+africa&hl=es&as_sdt=0,5

Falabella Luco, S. and Martínez Gamboa, R. (2012). **Escritura de artículos académicos: la metodología ESE:O.** *Estudios Filológicos* 49. Retrieved March 2, 2018 from https://scielo.conicyt.cl/scielo.php?pid=S0071-17132012000100004&script=sci_arttext

Foundation for Critical Thinking (n.d.). Our concept and definition of critical thinking. Retrieved February 20, 2018 from http://www.criticalthinking.org/pages/our-conception-of-critical-thinking/411

Garrard, J. (2007). *Health Sciences Literature Review Made Easy: the Matrix Method.* Burlington, MA: Jones and Bartlett Learning. Adapted in Duquesne, Gumberg Library, Matrix Method for Literature Review: The Review Matrix. Retrieved 3 March 2018 from http://guides.library.duq.edu/matrix

Gibson, W (1966). *The Limits of Language*. New York: Hill and Wang, 1966, page number unavailable. Cited by Nordquist (2017, October 13). Retrieved February 14 from https://www.thoughtco.com/voice-writing-1692600

Graham, M., Hale, S. A. and Stephens, M. (2011). Geographies of the world's knowledge. Ed. Flick, C. M., London, Convoco! Edition. Retrieved March 1, 2018, from https://www.oii.ox.ac.uk/archive/downloads/publications/convoco_geographies_en.pdf

Howard, R.M. (1992). A plagiarism pentimento. *Journal of Teaching Writing*, 11(2), 233-246.

Howard, R.M. (1995) Plagiarisms, authorships and the academic death penalty, *College English*, 57(7), 788-806, p. 799. Retrieved March 4, 2018, from http://surface.syr.edu/cgi/viewcontent.cgi?article=1002&context=wp

Huber, M. (2011) How should we define health? *BMJ*,343:d4163

International Committee of Medical Journal Editors. (n.d.) Defining the role of authors and contributors. Downloaded 4 March, 2018 from http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html

Israel, M. (2017). Identifying authorship: how difficult can it be? Retrieved March 4, 2018, from https://publicationethics.org/files/Mark_Israel_presentation_ENGLISH.pdf

Killam, L. [Nurse Killam] (1) (June 5, 2013). How to create a table for a literature review summary. Retrieved February 26, 2018, from https://www.youtube.com/watch?v=d4jeDG0Cbvw

Killam, L. [Nurse Killam] (2) (June 6, 2013). Completing a summary table. Retrieved February 26, 2018, from https://www.youtube.com/watch?v=nX2R9FzYhT0

Kruger, H.S et al., (2005). Obesity in South Africa: challenges for government and health professionals. Title retrieved March 14, 2018, from Google Scholar https://scholar.google.com/scholar?start=0&q=obesity+in+africa&hl=es&as_sdt=0,5

Kuhn, T. (1962). *The Structure of Scientific Revolutions*. Chicago, Ill: University of Chicago Press.

Martin, H. & Ohmann, R. (1963). *The Logic and Rhetoric of Exposition*, revised edition, New York, NY: Holt, Rinehart and Winston.

Maxwell, J. A. (2012). *Qualitative research design: an interactive approach. Chapter 3.* Thousand Oaks, CA: Sage. Retrieved February 26, 2018, from http://www.sagepub.com/sites/default/files/upm-binaries/48274_ch_3.pdf

Monash University (n.d.), Research and Learning Online: Voice. Retrieved March 5, 2018, from https://www.monash.edu/rlo/graduate-research-writing/write-the-thesis/writing-a-literature-review/voice

Ntandou. G. et al., (2009). Abdominal obesity explains the positive rural-urban gradient in the prevalence of the metabolic syndrome in Benin, West Africa. *Nutrition Research* 29:3. Title retrieved March 14, 2018, from Google Scholar https://scholar.google.com/scholar?start=10&q=obesity+in+africa&hl=es&as_sdt=0,5

Onubi, O.J. et al. (2016). Maternal obesity in Africa: a systematic review and meta-analysis. *Journal of Public Health*, 38, Issue 3. Title retrieved March 14, 2018, from Google Scholar https://scholar.google.com/scholar?start=0&q=obesity+in+africa&hl=es&as_sdt=0,5

Organization of Economic Cooperation and Development (n.d.). Retrieved March 2, 2018, from http://www.oecd.org/pisa/aboutpisa/pisa-2018-participants.htm

Pinker, S. (2014*). The Sense of Style: The Thinking Person's Guide to Writing in the 21st Century.*[Kindle version]. Retrieved from Amazon.com

Renzaho, A.M. (2004). Fat, rich and beautiful: changing socio-cultural paradigms associated with obesity risk, nutritional status and refugee children from sub-Saharan Africa. *Health and Place*, 10:1. Title retrieved March 14, 2018, from Google Scholar https://scholar.google.com/scholar?start=10&q=obesity+in+africa&hl=es&as_sdt=0,5

Saldhana, A. (2002). Music, space, identity: Geographies of youth culture in Bangalore. *Cultural Studies,* 16(3). Retrieved March 5, 2018, from https://pdfs.semanticscholar.org/bb16/f3d5a2419fd5ebc482052af2e2f9f0bdefeb.pdf

Study Guides and Strategies (n.d.). Transitional words and phrases. Retrieved 14 March, 2018, from http://www.studygs.net/wrtstr6.htm

Winslow, C-E. A (1920). The Untilled Fields of Public Health. *Science* 51 (1306), 23-33, cited in University of California, Berkeley, Library. What is public health? Retrieved on February 15, 2018, from http://guides.lib.berkeley.edu/publichealth/whatisph

Yale Center for Teaching and Learning (n.d.). What is plagiarism? 4th para. Retrieved February 15, 2018, from https://ctl.yale.edu/writing/using-sources/understanding-and-avoiding-plagiarism/what-plagiarism

Zahora, T. (June 10, 2013). Critical analysis of literature: Organizing your notes. Retrieved February 26 from https://www.youtube.com/watch?v=V3zGDzeSNBo

Ziraba, A.K., Fotso, J.C., & Ochako, R. (2009). Overweight and obesity in urban Africa: A problem of the rich or the poor? *BMC Public Health.* Title retrieved March 14, 2018, from Google Scholar https://scholar.google.com/scholar?start=0&q=obesity+in+africa&hl=es&as_sdt=0,5

Copyright