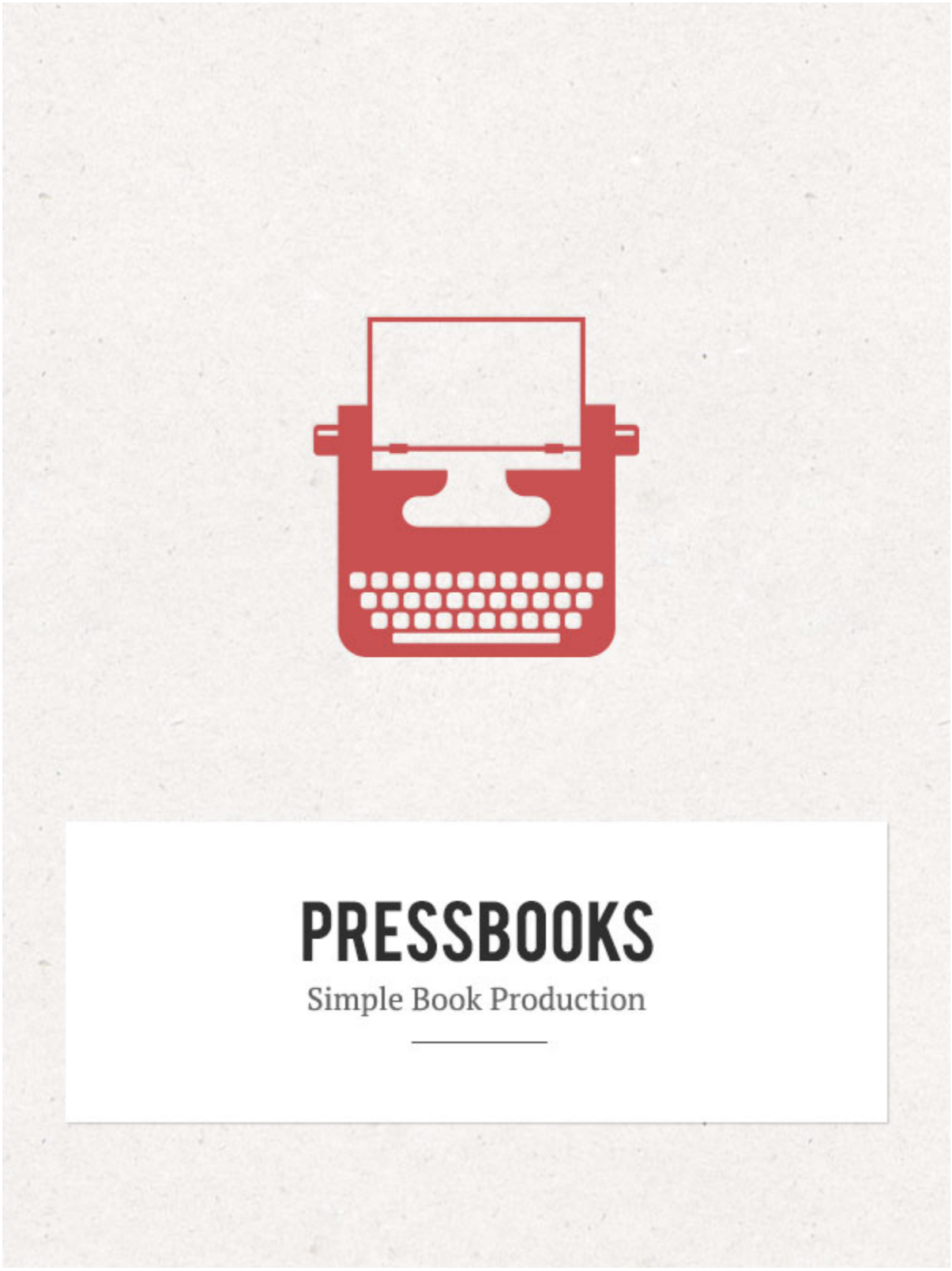
Academic Writing in a Swiss University Context



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IRENE DIETRICHS

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Contents

For Novice and Experienced Writers

” Brilliance has an obligation not only to create but also to communicate”

– J.R. Platt

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Preface

One of the important lessons I like my students to learn is that they will build their research on work of other researchers and by doing so become gradually part of this community. Some of the research in the field of academic writing this e-book builds on is listed in the bibliography.

Research is also often only possible if necessary funds are available. Therefore, I would like to thank Lucerne University of Applied Sciences & Arts for supporting the project of writing this e-book.

I am also most grateful to colleagues from the Department of Engineering + Architecture who critically read it and helped to make it a useful resource for our students, and I am particularly indebted to Beatrice Hunziker and Peter Radcliffe-Lunn. As this is still work in progress, these acknowledgements will be continuously updated.

I. D., 10 September, 2018

I

Introduction

Who this book is for

One of the main ways you are assessed at Lucerne University of Applied Sciences & Arts is through writing. If you follow a complete study programme in English or attend modules taught through the medium of English being able to express yourself well in writing and in academic style in English is crucial. Therefore, you will want to learn to write as clearly and accurately as possible, not only to succeed in your current course but also in preparation for your career. In your professional life you will be expected to communicate effectively in English, not only orally. Writing assignments also encourage you to read widely, think critically, improve your communication skills and develop the competence and professionalism needed for your future career.

 **Additional information – only for students of architecture/interior architecture**

As a student of architecture or interior architecture, the major part of your education is the design of buildings executed through drawings, models and other kinds of visual representation. Together with the work space of the architectural studio, the presentations of designs followed by a challenging review (crit or jury) – these are undoubtedly the main elements of architectural education.

However, words too are an integral part of what architecture is all about. Most obviously, words are a necessary explanation of what kind of architecture is referred to in drawings and models **(writing *about* architecture)**. Words are also a way to explore new territories, new ideas, new kinds of architecture. Without some of the influential writings about architecture – from the Roman architectural theorist Vitruvius to the modern Robert Venturi – there would be no modern architecture. Another reason writing can be a crucial element in a design process is that it can be an *aid in the thinking process* (**writing *for* architecture**).

Academic writing in general

Academic and/ or scientific writing is a social practice. This means you always write with a readership in mind and you always write with purpose, for example to enquire, to explain or to evaluate. What is right and wrong is defined by the user in the social community – at university your teachers, fellow students or companies. Furthermore, academic subjects are classified into different disciplines that have evolved over the time, each with their own traditions and conventions. Generally speaking, a discipline is a broad area – such as **arts**, **engineering** or **social sciences –** in which certain subjects are slotted; each discipline has its own approach to academic study, its own discourse and its own

favoured way of writing about its subjects. Different text types of academic writing are known as genres. They have distinct purposes, forms and recognized structures.

This means, the way academic writing is organized and the way language is used for example in an engineering report has developed through centuries of use by practitioners. Writing about design might differ from conventions in engineering diciplines in terms of genre or text types. These discipline-specific conventions must be learned by observation, study and practice. However, this book presents certain basic principles that are accepted in most disciplines.

Academic writing at Lucerne University of Applied Sciences & Arts

During your studies at Lucerne University you might have to write:

- various kinds of reports (lab report, project or scientific report)
- a seminar paper
- a case study
- bachelor thesis
- master thesis

> **A scientific report is *not* an essay**: Students who have to write a scientific report for a project should be aware that this is a completely different genre than an essay. Many students coming from upper secondary education or international schools have practised essay writing, which is a genre often associated with academic writing in higher education in English speaking countries such as the UK or the US, or countries following these traditions. However, the requirements for a technical or scientific report at a Swiss university differ from these traditions, which is another reason for writing this guidebook.

Whatever the genre, there are certain things that are common to all. Academic writing:

- uses evidence to support points it makes
- uses a logical structure and order to guide the reader through the writing
- contains references to anyone else's ideas or work used

You will also always need to:

- select relevant information from a wide range of sources
- understand ideas, evaluate and summarize them
- develop your own ideas, questions and theses
- present theories, research and study results with appropriate language
- visualize content
- plan your writing
- interact with peer students and lecturers.

How this book is organized

This book mainly consists of guidelines for academic and technical writing based on the latest research and best practice in this field. Besides the theory, you find special notes or links to other websites, many activities (with or without key), interactive exercises or food for thought, additional information only for students of architecture/ interior architecture.

Go to **Content** to find the main chapter and sub-chapters. In brief what each part contains.

What is research

This part briefly explains the concept *research*.

Writing process

This part is about the various stages of the writing process. It covers pre-writing processes, finding a research question, effective ways of finding and evaluating sources, how to conduct research, methodological aspects, writing and re-writing drafts, the overall organization of academic texts as well as the building stones of texts and how they are connected.

Writing the parts of scientific reports

This part provides detailed guidelines on how to write the various sections of scientific reports, starting with the abstract but also considering what to put into the appendix.

Academic style guide

One of the essentials of scientific or academic writing is clarity, which means your text should be clear, simple and well-ordered. This part deals with various issues regarding clear academic style including vocabulary and grammar aspects but also how to write numbers or deal with abbreviations in a scientific document.

Avoiding plagiarism

This part discusses the reasons for acknowledging sources in academic texts and provides relevant guidelines for in-text-references, quoting or paraphrasing and summarising previous research.

Using non-text material

An essential element of scientific manuscripts is the quality and function of non-text material such as tables and figures, which is presented in this part.

Guidelines on APA or DIN citation standard

This part provides detailed guidelines and further links on the ‘mechanics’ of references, the formal details of in-text citations and a list of references according to APA citation and DIN citation standard.

How to use this book

The structure of this book follows the logic of a systematic research and writing process and should support novice writers to submit work which is consistent with expectations of their academic community. However, more experienced writers might be interested in reading about specific aspects and will go to these sections immediately.

II

What is research?

General

Research is a systematic investigative process employed to increase or revise current knowledge by drawing novel conclusions based on analyses of previous research/knowledge. Research attempts to answer intellectual and practical questions through application of systematic methods.

Basic vs applied research

Research is divided into two general categories:

1) Basic research is inquiry aimed at increasing scientific knowledge.

2) Applied research is effort aimed at using basic research for solving problems or developing new processes, products or techniques. Basic research is mostly carried out at universities such as University of Zurich or MIT (Massachussetts Intsitute of Technology) or CERN (the European Organisation for Nuclear Research) whereas applied research is mainly carried out at universities of applied sciences.

 **Primary vs secondary research**: Primary research is concerned with collecting new data, mostly by the researchers themselves. Secondary research is concerned with investigating data collected by somebody else.

Research consists of:

- asking questions that nobody has asked before,
- doing the necessary work to find the answer,
- communicating the knowledge you have acquired to a larger audience.

Usually research follows a systematic procedure as presented in Fig 1 below.

Fig 1 Questions asked during a systematic research process

How do we develop a research focus?

The problem might come from outside, for example from an industrial partner seeking a solution, or researchers have to find new research questions by themselves. As any kind of research builds on previous knowledge, the 'state of the art' in the field of inquiry has to be reviewed. During this review, researchers usually have to find a gap, something that has not been investigated before. The data collection process is the next step for which appropriate methods have to be chosen (e.g. measurement, tests, experiments, laboratory analyses, surveys, literature based research). One key feature of scientific methods is that the investigation must be replicable, which means somebody else using this particular method reaches the same results. Next, results are analysed and interpreted. This is followed by one or more conclusions and recommendations.

Writing up research

The final step, even though not shown in Fig 1, is the dissemination of research, often in form of a report or a scientific paper. This is the subject of the next chapters of this book.

III

Writing process

General

Successfully written texts are in general a result of a writing process. As shown in Fig 2 below, the writing process starts from understanding what you have to do and planning your work, (step 1), which could be a draft of a preliminary outline (step 2), then reading and doing other necessary research (step 3). The next stage consists of analysing the data, finding and evaluating results, thinking about their implications and drawing conclusions. During this stage most researchers start writing a first draft (step 4 + 5). Any writing has to start with determining the target readers, the purpose and the conventions of the particular text or genre (step 6). The last stage is often underestimated, but revising, proofreading and editing is vital (step 7+8). So, make sure that you reserve sufficient time for this stage of your writing process. All this, taking into account the feedback you may receive, leads to your final text (step 9).

Fig 2 The writing process in 8 steps

The details of each of these steps are presented in the following sub-chapters.

1

Planning your work

General

The planning stage is vital for the quality of your writing project and should be approached in a systematic way.

Understand the assignment

One of the first hurdles you need to overcome before you actually start writing is to make sure that you have understood the assignment. What exactly are you asked to do?

Make sure you know from the start the practicalities:

- Is there a minimal/ maximal length?
- When is the hand-in date (deadline)?
- How many copies must I submit?
- How must I submit the work (electronically or as one or more hard copies)?
- What are the assessment criteria?

Choose “A piece of the pie”

Even if the broad topic of a written assignment, a seminar paper or project report or a bachelor thesis was prescribed, you first task is find a *detailed perspective* that you wish to pursue. To achieve some depth in your research and your writing you need to focus attention on a narrower “topic” so that you can use examples and details rather than just general (superficial) statements. The difference between ineffective and effective academic writing is often the difference between general statements and specific details.

 **Finding a research question**

Narrowing down the topic is necessary to find a focus and a research question. Finding a question you want to answer is often the most critical part of a project. This can be done by asking the Five Whs:

1. **Who?**
2. **What?**

3. **Where?**
4. **When?**
5. **How?** (in some cases)

Example 1

Imagine you want to write a report on  *bottled water*. How could you go from this topic to find a research question?

- Who: consumers
- What: environmental impact
- Where: disposal sites
- When: no time frame

Research question could be: **What is the environmental impact of the disposal of plastic water bottles?**

To narrow it down further more you can add another focus, such as a time frame, or a country, place or a producer of certain plastic water bottles: **What has been the impact of the disposal of plastic water bottles in Switzerland since the introduction of PET?**

Example 2

Imagine you write a study paper on *Atmosphere in buildings*.

- Who: building, architect
- What: light, a specific material, spatial aspects
- Where: part of building, inside, outside
- When: no time frame

The resarch question could be: **How does natural light create atmosphere in the Doha Tower?**

This process of narrowing down the topic goes hand in hand with research to develop a working knowledge about the topic, its scope, related issues, questions other researchers have investigated. For more go to

Aims & objectives in engineering reports

Students of engineering are often provided with a task or project. Their first task is to narrow down the focus by formulating an aim and objectives. The starting point can be a research question from which you must define an overall aim and measurable objectives.

The **aim** is what you intend to achieve with the project; it is the reason why you conduct your research

and where you hope to be at the end. Aims should be single and have a focus.

When writing about your aim, you usually use an infinitive, such as *to compare, to investigate, to verify,* or *to measure.* ***Example:***

> The aim of this project is to investigate the use of GPS for enhancing competitive race biking performance

The **objectives** then are steps towards this aim. They are specific statements and measurable outcomes. They are often formatted as a list, with or without numbers. For the GPS example two objectives could be:

> Objectives are:
>
> 1. to find out which GPS system is suitable for installation on a race bike and will work satisfactorily in the race biking environment.
> 2. to undertake a field trial to investigate the effectiveness of the chosen technological configuration and thus improve the ideas.

Objectives should be **SMART**, which means they should be:

> **S**pecific – be precise about what you are going to do.
> **M**easureable –you will know when you have reached your goal.
> **A**chievable – don't attempt too much – a less ambitious but completed objective is better than an over-ambitious one that you cannot possibly achieve.
> **R**ealistic – do you have the necessary resources to achieve the objective – time, money, skills, etc.
> **T**ime constrained – determine when each stage needs to be completed. Is there time in your schedule to allow for unexpected delays.

Writing in a team

During your studies – but maybe also in your professional lives – you might have to write a report or paper as a team. Different team members often take different roles. Sometimes one team member drafts the whole paper and the others review and revise it. At other times, writing parts are allocated to different team members and at the end the parts are connected to one text, reviewed and revised by everybody or again one team member. Whatever the case, clarify beforehand who will do what, set a timetable, consider software to ease collaboration, such as sharing drafts on Dropbox, or using Google Docs (Gastel & Day, 2017).

2

Research methodology

General

After formulating a research question – or in case of engineering projects the aims and objectives – you need to decide *how* this investigation can be undertaken, the *type*, *quantity* and *quality* of data you need to answer the research question or to achieve the objectives.

Quantitative or qualitative methods

In research we distinguish between *quantitative* (concerned with numbers) and *qualitative* methods. Research of scientists and engineers involving experimental design, measurement and numerical data processing is called *quantitative*. Mathematical (statistical) methods are then used to find for example correlations of or interrelations between behaviour, measurements or responses from questionnaires.

Qualitative research on the other hand is concerned with opinion, experience and meanings and perceptions, and is often based on data from observations, surveys or interviews. Data can be used in many ways: for example to provide background information, to identify a problem or to support your arguments or as evidence. If used properly they will improve the quality of your work. A 'case study' is a likely place to use qualitative research: here often a question is posed, followed by research; results are obtained and tentative conclusions drawn.

 In social and natural sciences research is often referred to as *empirical research*, which is the scientific method of testing a hypothesis through observation and experiment. This can be done with quantitative or qualitative methods.

Some methods of research:

- *Literature research* to find out what other authors or researchers have written about a topic related to your research (*secondary data*). Guidelines of *how* to conduct such research and *how* to integrate other authors' work into your work can be found in the sections on *Literature based research*, *Literature review* and *Avoiding plagiarism*.
- Surveys or interviews, two instruments of empirical research (*primary data*). For more details go to *Writing up surveys and interviews* in the Results chapter.
- Site visits/ site analysis to for instance take photographs, take measurements or make

sketches.

> **Note:** when choosing a method you have to consider carefully *why* this is the best method to achieve your research aim and the objectives.

The choice of methods has to be connected to a consideration of *what* to do with the data after collecting them, *how to analyse them*.

Since these methods can be established evaluation instruments such as the morphological box, statistical methods or other instruments and differ between disciplines to a great extent, this writing guide does not provide more details.

3

Literature based research

General

A specific section of many scientific articles is often titled *literature review*, which contains an analysis and critical review of a specific body of scientific knowledge. This specific section is sometimes expected in Bachelor theses, very often in a Master thesis or post-graduate work. Project reports will rarely have such a section. *However*, research always starts with exploring research of other scientists. As a student researcher, you may develop information you generate yourself, using previous knowledge about the topic you are investigating. This research usually is literature based.

Purpose

The purpose of this research can be to (adapted from Ridely, 2012, p.24):

- build up knowledge about a specific field;
- provide a historical background for your research;
- give an overview of the context in which your research is situated, maybe of current debates, issues and questions in the field;
- include relevant theories, concepts or explanations of terms;
- give insights into methods used to collect and/or analyse data;
- describe related research in the field and show how your work extends/ challenges this, or address a gap in the work in the field;

The literature research will continue throughout a project and findings, opinions of other researchers are considered, included or referred to in many sections of a report/ paper or study. However, as it is most likely the first step of any research project, the following sections focus on *literature based research.*

Google vs the Library

Googling has become synonymous with research (Mostafa, 2005), and Google's accessibility has made it irresistible.

Note: become a critical user of Google and see e.g. this article on 'How to be a Google power user'. There are alternatives to Google, such as the Swiss search engine **Swisscows**, the popular

alternative DuckDuckGo, or the Euopean search engine startpage.

However, in academic writing quality matters and you need to base your work on sources written by people who know what they are talking about. For those types of sources, the library (online or not) is indispensable, and you need to complement your Google searches with library searches.

Value of online searches

One of the biggest problems in being able to access much information through computers is deciding which sources are reliable and useful and which can be ignored. Search engines such as ***Google*** or online encyclopaedias such as ***Wikipedia*** can be *useful at the beginning of your research* in pointing you towards sources and helping you decide the parameters of the subject you are writing about. ***Google Scholar*** will help you find academic, peer-referenced journals. However, you cannot rely on these sources alone for your research: they will not be comprehensive enough and many sources, especially popular ones will be discounted as credible sources if you include them in your references. You also need to ensure that any sources you use are correctly and fully referenced (see Chapter 6).

Libraries and electronic databases (ask our librarian for support)

Your assignment brief may recommend sources to use for your research, but you probably will need to look further. Electronic databases are the best place to go for good-quality material for your research as they store information from a range of sources and allow you to construct targeted searches. Authorised access is needed, normally via your academic institution. Online library catalogues allow you to search for sources by **title, author**, and **subject word.** Students at HSLU can use the options shown in table 1.

table 1: Overview of online library catalogues at HSLU

iluplus.ch	Swissbib	ids Lucerne	Swissuniversities.ch
Iluplus is the search engine for all university libraries in Lucerne (IDS Lucerne). Here you also can access specialist databases.	**Swissbib** is the meta-catalog of Swiss university libraries and the Swiss National Library. It provides you with a quick, easy and comprehensive access to academic information resources in Switzerland	**IDS Lucerne** like **iluplus** encompasses catalogs of all universities in Lucerne. It is also part of the Informations Dienst Deutschschweiz.	**Swissuniversities** provides electronic information sources for universities of applied sciences. These are specific databases, articles and books.

The table shows which databases can be accessed on HSLU Campus or with a VPN connection. The website **Swissuniversities** offers a wide range of information resources. You can choose between a certain field (engineering, architecture, economics) or type of source (magazine, journal, encyclopedia, norms, statistics). Usually, sources are available as full-text (not just the abstract or summary).

E books and online resources

Many books and textbooks might be available as e-books, allowing you to use a computer to search the text for specific information expediently. Many E-books can be accessed on HSLU Campus or via VPN. Journals should be of major importance in your research as current issues provide cutting-edge information. A peer-reviewed journal means the article will have been written by someone who knows about the subject and has been put through the quality vetting process by other experts in the field. Both journals and newspapers can be searched easily through electronic databases.

Key word searches

Identifying key words for your research is something you (should) do as you narrow down your topic and find a focus. The key words describing your research topic (nouns and adjectives) should be very accurate. There are various techniques:

Snowball technique: when reading around your topic you become familiar with research done in the field and who the important authors are; their work will lead to more relevant literature in the field; so by following up their citations you establish a list of the relevant research and literature.

Boolean logic: The English mathematician George Boole (1815-64) developed a system of symbols and words used to conduct searches by combining key words into search statements. Some catalogues, databases and search engines are based on variations of this Boolean logic, which is worth investigating such as this webpage by Google.


Here are two examples of Boolean logic:

1) If you combine words with AND, the system searches documents that contain both words.

Example: “beam AND truss” yields hits relating to building construction, while the hits for “beam AND sensor” will interest electrical engineers.

2) If you combine words with OR, the system finds documents which contain either of these words.

Example: “boiler OR furnace” will yield a great number of hits, all of which either of the terms “boiler” or “furnace”.

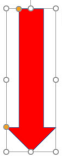
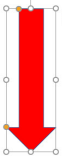
Evaluating quality of sources

Before including information of sources in your writing they have to be evaluated carefully, especially in case of online resources because ”anybody can put information on the Internet and the material is not necessarily subject to peer-review quality checks” (Ridley 2009, p.47).

The highest quality sources are those at the bottom of the list in the box below. These are works written

by experts in their field, published in 'peer-reviewed' journals. The problem for students might be the jargon used, which makes such texts at first hard to follow. But the effort to understand such documents pays off as your reader knows that you are relying on the best information available.

Printed copies of **journals** are another important source, although it is often more convenient to search for online journal articles. Once you have located a suitable book or journal through your library's online catalogue, you might find other sources about the topic either through the article's bibliography or on the same or nearby shelves. Scan the titles of those works to locate additional sources you might not have found in your online catalogue search.

general knowledge  specialized knowledge	General encyclopaedias General interest magazines/ newspapers Specialised magazines/ journals Government documents Scholary books Academic journals	less authoritative  more authoritative

Quality of sources:

- **Books** and **articles** in **scholarly journals** undergo a lengthy editorial process before they are published.
- **Articles in trade** and **other professional journals** do not always go through a strict review process. Their authors might also have a personal commercial interest and thus present a product or issue from a particular, biased point of view.
- **Articles in magazines and newspapers** are usually reviewed only by the editors (who might represent a certain point of view).
- **Theses** and **dissertations** are final projects for students in graduate programs and vary in quality and reliability.

Other indicators of the quality of a source are:

- its **date**, i.e. recent publications carry more weight. For online sources such as websites the last update entry can inform you when the information was written and might therefore be suitable for your purpose.
- its **author(s)** or **sponsor.** Government and educational sources (.edu, .org, .gov) are mostly more reliable than commercial ones (.com).

You should favour authored documents over those without author. But: Some documents have no author as they are from an institutional source like a university. If that is the case they are probably preferable. Otherwise scrutinize the webpage to find credentials of the persons involved and/ or cited or when the webpage was last updated.

Note: information on social media (e.g. wiki or blog) will not have been peer reviewed and therefore unsuitable to cite in an academic paper.

Therefore, when assessing the quality of internet sources always ask the following questions:

- How current are they?
- How correct?
- How complete?
- How unbiased?
- Who put it on and why?

See also the evaluation tips of internet sources provided by Reading University.

Using Wikipedia

Wikipedia is a multilingual, web-based, free-content encyclopaedia project based on an openly editable model (Park, 2011). While it is not an accepted source for an academic paper it can help to find baseline information and acquire common knowledge. However, it can be used as a source for images https://commons.wikimedia.org.

For more information on why *Wikipedia* is not accepted as a source for academic papers, go to the webpage of Cornell University.

Reference management: keeping records and organising information

Keeping track of key word searches you have conducted and in which catalogues, databases and search engines saves valuable time, especially when working in a team. Develop a simple system to record your 'hits' such as presented below:

Topic of your research			
name of catalogue, database, search engine	key word searches	results of the search (articles, books etc)	date of search

The *management of references* can be assisted by various useful software packages that assist you in managing the references by building a database of references.

Microsoft Word offers a basic reference management tool (located under the 'Reference' tab). It is recommended to use a more sophisticated one such as ***Citavi***, ***Zotero*** or EndNote. *Lucerne University*

recommends using *Zotero* or *Citavi.* Most of these tools enable you to write your list of references automatically, with the preferred citation standard. For more information go to the HSLU library website (information is in German). For more information on Citavi go to https://www.citavi.com (only Windows) or their manual.


However, when you use software management systems always check references as these tools are not free of error (see the guidelines for correct in-text citations and list of references in this book).

4

Annotated bibliography

General

- An ***annotated bibliography*** is a list of sources (usually on a narrow topic) in which each citation is followed by a brief paragraph that summarizes, describes, and/or critically evaluates the source.
- Depending on length and purpose, an annotated bibliography may be just one long list of alphabetized entries (as in a normal bibliography), or it may be categorized by subject, material type, time period, etc.
- Annotated bibliographies may be produced using any citation style. Ask your professor if he/she requires that you use a certain style. At Lucerne University of Applied Sciences &Arts the citation style usually used is APA. For guidelines on how to use this citation standard correctly in the bibliography go to

What information should be included in the annotations?

In your annotations, you are generally expected to do more than merely summarize each source; some critical analysis is usually required. Although there are no hard and fast rules about what to include in annotated bibliography entries, most usually include some of the following elements:

- Brief description/summary of the work cited
- Comments about the work's usefulness or quality, usually including attention to one or more of the following features:

  a.) the scope or relevance of the work,

  b.) the intended audience,

  c.) the author's credibility or expertise, or

  d.) the work's relationship to other works in the area of study

  e.) Comments about any special features of the work (graphs, charts, appendices, etc.)

The length and style of each annotation varies according to the purpose and audience for the annotated

bibliography, but most annotations are written in complete sentences and fall between 50-150 words.

 For an example of annotated bibliography go to annotated bibliography

How to create an annotated bibliography

Descriptive annotations are brief summaries of the source, no more than two or three sentences.

1) Provide a complete source citation, following the guidelines of your university's system.

2) Format each citation so that it stands out from its annotation (colour or **bold** font)

3) In the annotation identify the information and ideas most relevant to your project, such a significant arguments or findings.

4) Include relevant information about the background and qualifications of the author or key authorities mentioned in the source.

5) Note the type of source (e.g. book, journal article, or Web site) and its length.

To carry out a source evaluation, respond to the following prompts:

1) Provide a complete citation of source (APA).

2) In what way are the information, ideas and arguments in the source relevant to your research writing project?

3) What have you learned about the author and publisher that would lead you to accept, question, or reject the line of argument presented in the source?

4) In what ways does the publication date of the source affect your judgement of its usefulness for our project?

5) How are you likely to use this source in your project?

5

Questionnaires and interviews

General

Questionnaires and ***interviews*** are two methods of empirical research.

Questionnaires are documents that ask a group of people (called 'respondents') to complete a number of questions or statements about a topic. They are usually a **quantitative method** of research, provided you have enough data (for more details see below). Otherwise, they are like interviews a way of getting primary **qualitative** data.

Interviews are meetings between researchers and an expert about a topic during which the researcher questions the expert. They are used for **qualitative research.** Results can differ considerably from interviewee to interviewee and are not necessarily representative. Data obtained is often difficult to consolidate. Table 2 below illustrates the main differences.

Table 2: Main differences between questionnaire and interview

	questionnaire	**interview**
Purpose	to gather information from a typical audience about the topic	to gather information about the topic from an authority
Respondents	(usually) people chosen at random	authority about the topic
Design	written statements or questions designed with possible answers on the document given to many respondents respondents answer the survey alone and return it to the designer, usually by mail	written (open) questions designed to be answered by the interviewee usually one person per interview interviewee answers directly (face to face, on the phone, by email etc)

Which method is adequate depends on your research question(s) or hypotheses, your aims and objectives. You need to consider what you want to achieve, what kind of data you require, which results you expect from a certain method, whether you want more in depth information or need representative answers. You also have to consider which method is feasible within the scope of your research.

What is a representative *sample*?

In quantitative research the group of people surveyed are called **"sample".** This can be representative or not. A representative sample does not significantly deviate from the sampling universe. A rough guideline is that for a survey you need about 1'100 answers per investigated

group. So, if you investigate the attitude towards costs for public transport of the general public within the Canton of Lucerne, you need at least 1’100 responses from people who feature similar characteristics as the whole population in terms of gender, age, income, origin and other factors possibly influencing your conclusions. However, in case your sample consists mainly out of rich people, it is unlikely to be representative for the whole population in terms of their attitude towards costs for public transport even if there are more than 1’100 answers.

If you use questionnaires as a means to conduct qualitative research, the groups of people asked are the **“respondents**”.

 See next two chapters on more deatils on how to design, conduct and write up results of questionnaires and interviews.

6

More specific detailes of questionnaires

Designing and administering a questionnaire for research information

The first two questions you need to answer for yourself are: (1) *What (kind of) information do you want to get? And: (2) How do you intend to analyse it?*

The type of information you want to get will lead you to the next step, which is identifying your **target audience**, the persons from whom you want data. Here you could for example distinguish between 'directly involved' and 'indirectly involved' persons. Do these persons represent the population?

 Two terms used in quantitative research:

Population: this refers to the whole group (e.g. all men in the Canton of Jura; all households in Swiss cities with solar PV panels on their roofs).

Sample: this refers to a subset of individuals of a specific population (all households in the city of Lucerne with solar PV panels on their roofs).

Within the scope of this book no information can be provided on more specific issues of quantitative research such as statistical significance of data or statistical methods to evaluate quantitative data.

Considerations for design of questions

1) KISS

Keep **the questionnaire s**hort and **s**imple (the **KISS** rule). The shorter the questionnaire the more people are willing to answer. Best is to estimate the time people need to answer all the questions. It should not take longer than 15 minutes (for some people this is already too long).

Rule of thumb: closed questions take 15-30 seconds to answer; open questions, from 30 seconds to a few minutes.

2) Simple scale

Do not ask for lengthy written answers. Instead, give a choice of possible answers, for example

Circle or X or tick one

always *usually* *sometimes* *rarely* *never*

SA *A* *NS* *D* *SD*

(Strongly Agree; Agree; Not Sure, Disagree; Strongly Disagree)

5 *4* *3* *2* *1*

(5= Excellent; 4= Very Good; 3= Good; 2= Needs improvement, 1= Poor)

3) One question- One idea

In each statement/ question should be **one idea** only.

Do you use English to communicate orally with clients? Yes No

Do you use English in written communication with clients? Yes No

Not: Do you use English for written and/ or oral communication with clients? (requires more than one answer)

Question types

When designing questions for an interview or questionnare, carefully **define** the type of information you are interested in. This should lead you to the type of question to ask. Your questions should all relate or be relevant for your research question(s).

If, for example, you are investigating 'the use of English at work', your questions or statements could include these:

Likert[1] scale questions (useful to assess people's opinions on a 4-10 point scale)

How frequently do you use English at work? Circle one.

Never *Sometimes* *Often* *Always*

[1] The American psychologist Rensis Likert first modelled the use of a five-point survey scale in 1932

Categorical questions (you can only select one option)

Do you use English at work? Tick the correct answer.

Yes *No*

Multiple choice questions (you are allowed to choose only one option)

If English was the corporate language of your next employer, which model would you prefer?

A) English only if somebody is present who does not understand the local language.

B) English only in all cases.

Multiple response questions (you are allowed to choose more than one answer)

In which of the following contexts do you use English? (you can tick √ more than one answer)

1. Communicating with clients (oral)
2. Communicating with clients (written)
3. At internal meetings
4. Communicating with colleagues (written)
5. Communicating with colleagues (oral)

Ranking questions (you place items in a following list in order of preference, writing 1 for most preferred option, 2 for the next and so on)

Open-answer questions

In qualitative research you can give respondents opportunities to comment (in their own words)

a) after options you have chosen, or

b) at the end of the survey because:

some respondents may choose an option you have not considered.

some respondents may prefer to comment in their own words.

Respondents' comments are strong, credible support when quoted directly.

 **To avoid weak results because of weak design: Try it out**

Before you send the survey ask another student to complete it to see whether your questions are clear, or try it with a 'friendly user', if possible a member of your sample. Then the survey can be imroved before being sent to all respondents.

Writing conventions for questionnaires

- A clear, descriptive title
- An introduction describing the reasons for the survey

- Clear directions about completing the questionnaire
- Demographic data (for example function in a company) about the respondent, but not the name
- The questions or statements to be completed by the respondent
- Space for written comments at the end of the survey
- Information on how to return the questionnaire to the designer
- An expression of appreciation for the time spent by the respondent.

> A useful and very detailed resource for the creation of questionnaires for a Bachelor or Master thesis: Survey_Writing_Guide_NEW

Writing up Survey results

Tabulating survey data

The more carefully the survey has been designed, the easier it is to collect, report and interpret the data. Usually the writer tabulates the results and translate those results into percentages and/ or averages because numbers are easily understood, and averages and percentages have greater impact than individual results. Find an example in Table 3 below.

Table 3: Results of a survey about driving under the influence of alcohol

question	**yes**	**yes**	**no**	**yes**
	number	percentage*	number	percentage*
1	18	81%	2	19%
2	10	50%	10	50%
3	3	8%	17	92%
4	10	50%	10	50%
Total number of students surveyed: 20 Total number of responses received: 20				

*Note: if you visualize results of surveys that are not quantitative but qualitative you do not use percentages. Some people in social sciences argue that 20 students are too small a sample to count as representative. Ask your tutor; if in doubt leave percentage away.

Principles to consider when writing up results

Writers use survey results to support their ideas and opinions. Therefore, it is necessary to

1. introduce the use of a survey in your methodology section,
2. include a copy of your questionnaire with the responses in an appendix,
3. present the results in the main body of the report.

There are several ways to report survey results.

Possible structure of results of questionnaires

 There is not one way of structuring your results but *always move from general to specific.*

Some examples of structuring results of questionnaires

Refer to the survey and state whether the results disagree or agree with previous research.

Example:

Results of a survey of 15 university students who were first born children supported previous research (see Appendix A for the survey). It showed that…..

In the background paragraph, describe and refer the reader to the survey in the Appendix.

Example:

A survey (XC, 2012) of 15 international students at Lucerne University was used to determine the study routines prior to exams (see Appendix 3 for the survey).

Describe the survey briefly and give the general results of the survey to support an idea in a main body paragraph.

Example:

The survey (XY, 2012) asked 15 undergraduate students to identify their personality characteristics. More than 9 of the respondents indicated that they fit the profile of first-borns, and more than 7 characterized themselves as independent achievers who were conscious of time and well-organized. Table _ gives the average percentages for the group.

Introduce results, report them in a table, and interpret them for the audience.

Example:

The results of the survey confirmed the author's belief that a great majority of typical university students wanted to learn more about the culture in Switzerland; 12 respondents chose 'culture' as one of their top three choices. Table 2 depicts the top five choices students made and the percentage for each.

Direct quotations from a survey can be powerful evidence. When a survey provides respondents with a

'comments' space, those comments can be used as direct quotations. Use same conventions as explained for interviews in the next chapter.

7

More specific details of interviews

Interviews for qualitative research

Interviews can be conducted with an authority/ expert or opinion leader. The ideal sample is considered to consists of 5 to 10 persons of a certain group.

Varieties of interviews

Social science distinguishes **unstructured**, **semi-structured** and **structured interviews** (table 4). In a structured interview the interviewer follows a rigorous set of questions (sometimes with a set of predetermined answers to choose from), whereas a semi-structured interview is more open, allowing new questions to be brought up as a result of what the interviewee says. Unstructured interviews allow the interviewer to develop questions during the interview and prioritise the depth of the answers. However, 'unstructured' does not mean 'impromptu': the specific topic or topics that the interviewer wants to explore during the interview – or the logical order of conversation – should usually be thought about well in advance.

Table 4: Advantages and disadvantages of interview types

	unstructured	**semi-structured**	**structured interviews**
advantages	discover information that was not anticipated, or which did not seem relevant (useful in case of highly competent interview partners) depth of information	allow focus on topics in more depth	reliable data: since all interview partners are asked same questions answers are easier to compare and to evaluate
disadvantages	challenging for interviewee as he/she must develop questions, keep focused etc. more time-consuming less reliability (questions might vary) finding a pattern when comparing the answers of various interview partners	the more unstructured, the less reliable and generalizable, and the more or less time-consuming	does not allow any spontaneity might not cover all relevant topics

Careful planning is the key to successful interviewing. Here are some guidelines:

- Do initial research to answer basic questions about your topic.
- Plan your questions according to the expertise of your authority.
- Plan questions that can give you the most relevant information in 20 min or less (interview guide).
- Keep your questions free of your own opinions (but ask the authority for his/her opinion if this is relevant to your topic)
- Follow some of your major questions with some simple follow-up questions for more specific detail.
- Immediately clarify points you are not certain about.

Allow enough time after the first interview to rework your framework or try your interview out with a 'friendly-user' before you conduct the first interview and revise your questions carefully if necessary.

Conducting the interview

Arrange a face-to-face interview, or interview the author by telephone or by email. If you meet the authority face-to- face, ask to audio-tape the interview and/or bring a friend to help take notes. Transcribing interviews: you do not need to transcribe an entire interview but only key passages that help you argue in your report. This transcript belongs into the appendix. Either you paraphrase or quote directly. In both cases you refer to material (transcript) in your appendix.

Group interviews

Group interviews which often are conducted as a discussion are a means of qualitative research and could be useful for the Kontext project. The topic of discussion needs to be precise; the leader of the discussion either allows the discussion to develop freely, or structures and moderates it with (frequent) questions.

Using and writing up interview information

Information obtained directly from an authority can be very persuasive evidence for an audience.The first challenge is an adequate analysis of the interview. The aim will be to find the relevant information with regard to the aim and the objectives of the project or the research question(s). This focus helps to find a pattern or to determine the topics and issues, which is in structured interviews strongly driven by the questions asked. These considerations result in an adequate structure and also help to distinguish relevant from irrelevant information, expected from surprising information yielded in the interviews. In case several interviews were carried out, a skillful synthesis of these interviews is asked for.

Go to the sections on writing the result and the discussion sections for more guidance.

Language focus

Writing conventions for using interview information include:

Clearly identify the expertise of the interviewee in the text of the report

According to X, chairman of the Board for XY…

The CEO of XY Alexandra Miller stated…

Use direct quotations

Professor Clark stated that "...."

The president replied that "...."

Refer to the interview questions in an Appendix at the end of the report.

During the interview, Yellowstone Park biologist Steve Cain said that .... (see interview questions, Appendix A.)

Refer to (or cite) the interview in the text and at the end of the text

in-text reference

In a recent interview, X, Director of the National Institute for economics,.... (personal interview/ personal communications, 2012)

X stated that .... (personal interview/ personal communications, 2012)

 Qualitative market research often employs a method called **Delphi method**. The name is of course associated with forecasting or predicting the future. For further information about this technique go to

8

Reading strategies

General

Even though this script focuses on writing this section provides an overview on strategies to use in dealing with the literature found during the research process.

SQ3R technique

A recommended procedure for reading efficiently is known as SQ3R (Survey, Question, Reading, Recall, Review), which prompts you to interact more actively with a text.

Survey the text for its gist or general idea (title, contents page, first sentence of paragraphs, abstract, introduction/ conclusion).

Question – while surveying devise questions you would like the text to answer.

Read the text more carefully if you think it is relevant for your research.

Recall the main points after you have read the text.

Review the text to confirm that you recalled all the main points significant for you.

Critical reading

 While you try to understand the main points of a text it is important to adopt an analytical and questioning approach, e.g. by trying to answer the following questions.

- What is the author’s key argument or main point?
- What conclusion does the author reach?
- What evidence does the author provide to support his or her argument and conclusion?
- Is the evidence strong enough?
- Does the author make any unstated assumptions about beliefs shared with the readers?
- Can these assumptions be challenged?
- What is the background context in which the text was written?

9

Creating an outline

General

It is important to think from the beginning of your project about the structure of your final report, both in terms of the macro-structure (overall structure or chapters) as well as micro-structure (structure of each chapter).

At the beginning: Don’t write – think!

Why create an outline? There are many reasons; but in general, it may be helpful to create an outline if you want to show the hierarchical relationship or logical ordering of information. Creating an outline:

- aids in the process of writing
- helps you organize your ideas
- presents your material in a logical form
- shows the relationship among ideas in your writing

It is worth investing enough time in such an outline as it makes the actual writing much more efficient.

How do you create an outline?

- determine the *purpose* of your report
- determine the *audience* you are writing for
- develop the *thesis/ focus* of your report

Then:

- **Brainstorm**: List all ideas that you want to include
- **Organize:** Group related ideas together
- **Order:** Arrange material in subsections from general to specific or from abstract to concrete.
- **Label:** Create main and subheadings

What does an (detailed) outline look like?

Detailed outlines often have the character of a table of contents, showing the overall structure and chapters with informative titles. The content of each chapter is presented in keywords, and also includes sources or any visualisation. You need to indicate an estimation of how much text each chapter

encompasses to show the weight of information.

A full-sentence outline is relevant for longer papers (e.g. Bachelorthesis). It contains the same elements as the key-word outline but is written in full sentences. It is like a research or project proposal engineers also have to write. The main purpose of such an outline/ proposal is to gain approval to do a project. You might have to convince the recipient of your project's value.

Hierarchical headings

Headings and subheadings are signposts that help a reader get through a report without getting lost. They also reveal the hierarchical relationships within your material, enabling readers to understand the various levels of importance in your work. For the writer of a report or thesis it is significant to think about this hierarchy very early because it helps to distinguish between *main ideas* and *sub-divisions* of this main idea. The next level in the hierarchy could be *examples* or other *details*. The example is adapted from Morley and Ganobcsik-Williams (n.d.):

Example

1. Main idea

1.1 First subdivision of main idea

1.2 Second subdivision of main idea[a]

1.3 Third subdivision of main idea

1.3.1 First example

1.3.2 Second example

1.4 Fourth subdivision of main idea.

[a] For each sub-level there must be at least 2 items

Activity for writing outlines

link with example

The complexity of the structure depends on the topic. It is useful to study the structure of reports similar to the one you are about to write. They can be models if you understand the rationale of their structure.

10

Structure of academic texts

General

The structure of academic texts depends not only on the logical development of a topic but also on conventions within disciplines. This book provides guidelines for finding the appropriate structure of a scientific report,and points out strategies to adapt this to project reports or seminar papers for design projects. Every type of academic text consists of an: Introduction – Main (central) part – Conclusion.

Depending on the specific genre the main part can consist of various parts. Project reports of engineers often follow the structure of a research article based on the IMRAD- model (introduction-methods-results and discussion, Fig 3):

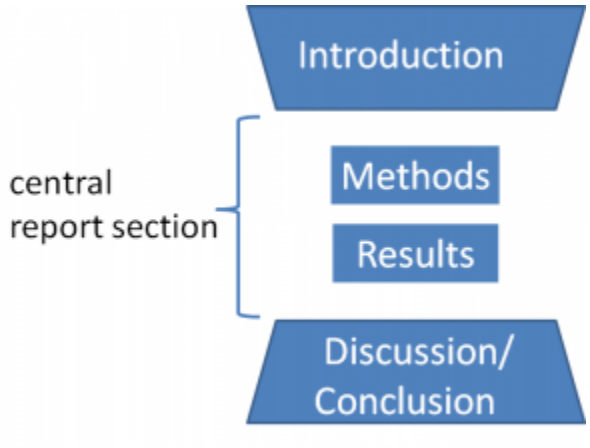


Fig 3 The so-called IMRAD model. Source: commons.wikimedia.org

The IMRAD model is *not* a formal structure but this is a structure based on a *principle*. This means that names of titles can vary – except for introduction and conclusion. However, the principle must always be the same, namely that the reader expects at the beginning to be informed what the paper is about, what questions it intends to answer, or which problem should be solved. They want to know something about the background, previous knowledge or research, and/or the theoretical framework. Then readers expect to understand how results were found and what they imply.

Depending on the length, purpose and genre, academic papers contain main chapters with appropriate

subchapters. This structure is the result of the kind of research that was carried out, decisions on the hierarchy of information but also conventions of a certain academic discipline. If, for example, students of engineering base their report on the IMRAD structure, headings and subheadings basically follow this (traditional) pattern, which can be often seen in research articles. However, if the paper is written by students of architecture or design, the structure is often topic based. See a summary of possible structures in table 5.

Table 5: Summary of possible organizational structures

<table>
<tr><th>Simple, traditional structure</th><th>Traditional, more complex</th><th>Topic based</th></tr>
<tr><td colspan="3">Title page
Abstract [a]
Table of contents
List of figures (optional)
List of tables (optional)
List of table and figures (optional)[b]
Glossary/ abbreviations (essential if abbreviated terms are used)</td></tr>
<tr><td>Introduction
(Background[c])
Literature review
Materials/ methods
Results
Discussion
Conclusion
Recommendations [d]

go to handout_Structure of engineering reports- Step by Step</td><td>Introduction
Study 1
• Introduction
• Methods
• Results
• Discussion/ conclusion
Study 2
• Introduction
• Methods
• Results
• Discussion/ conclusion
Discussion
Conclusions</td><td>Introduction
Topic 1
Topic 2
Topic 3
Conclusions</td></tr>
<tr><td colspan="3">Acknowledgements [e]
References/ list of references/ bibliography [f]
Appendix [g]</td></tr>
</table>

[a] Depending on the type of text this part is the management/ executive summary, summary or synopsis.

[b] This can be two separate lists or one list.

[c] A background chapter is necessary if this is not part of the introduction.

[d] if required

[e] Acknowledgements is sometimes placed after the abstract

[f] A bibliography may contain literature which was not explicitly referred to in the paper. The list of references lists all the literature used and referred to in the report.

[g] In case there is more than one appendix the heading is *Appendices* (Young, 2009).

Activity: Go to the library and find a report/ thesis or study paper with a similar research perspective to your own. Analyse carefully how it is divided up into sections, and consider the function each section performs in the overall goal of the thesis (adapted from Paltridge & Starfield, 2007).

For more details on titles/headings and subheadings, go to Outlines. For the writing of each section go to Chapter Writing the parts of scientific reports.

11

Writing drafts

General

What is the purpose

Most experienced writers would agree that in addition to pre-writing strategies, writing, revising and rewriting drafts are the basis for successful writing. You must be prepared to write a 'rough' draft, revise it, then continue to draft, then revise until the text is ready for the audience.

Feedback

Many university lecturers give students the option to hand in drafts. The feedback you will receive will help you see whether you are on the right track or not. If the draft is to be marked, make sure you know the exact requirements.

Which part do I start with?

There is no rule which part of the manuscript to start with. Many researchers start by drafting the methods section. Feel free to draft the remaining sections in whatever order works best for you.

(source: editage.com)

12

Guidelines for writing noise-free engineering documents

General

Get to the point **Adapted from Beer and McMurrey, 2009.:** Few engineers have the time for "biblical" reading. Just as your sentences need to be direct your documents need to have the most important information at the beginning. This means moving from the general to the specific. In a longer report your main points should become quickly evident to your reader through an informative title followed by a summary of your findings, conclusions or recommendations, or whatever the important information is.

Provide accurate information

Even the clearest writing is useless when the information it conveys is wrong. If you refer to data in your Appendix B of the report when you mean Appendix D, the error could cause your readers to lose confidence in your report. Inaccurate reference to the work of others also will cause your readers to be highly suspicious of the reliability of your whole report. Inaccurate directions in a set of instructions or procedures might be frustrating at best, disastrous at worst.

There is also a great difference between fact and opinion. A fact is a dependable statement about external reality that can be verified by others. An opinion expresses a feeling or impression.

Note the difference between these two:

> Fact: *The NR-48 tool features multiple programmable transmitters and a five-station receiver array.*
>
> Opinion: *The NR-48 is by far the best piece of equipment for our purposes.*

The second statement might be correct but is still only an opinion until supported by verifiable facts.

Present your material logically

Material must be organised in a way that each point, idea, and section is clearly and logically laid out. As always, think before writing, and keep your readers firmly in mind.

Make your ideas accessible

Without even reading a word, look at the pages of a document and get a good idea of how efficiently the material is presented. The impression comes from the structure of the material- specifically how well the material is laid out in visually accessible "chunks" for the reader. Most important here are 1) the subdivision of material into sections and subsections with hierarchical headings, and 2) paragraph length.

Use lists for some information

A well-organized list is sometimes the most efficient way to communicate information. There are numbered lists and bulleted lists. Bulleted lists are commonly used when items in the list are in no specific order:

Some of the main concerns of environmental engineering are

- Air pollution control
- Public water supply
- Waste water
- Solid waste disposal
- Industrial hygiene
- Hazardous waste

Lengthy bulleted lists (more than 7 items) are hard for the reader to refer to, so use numbers for longer lists even if no order of priority is intended.

Punctuation and parallelism in lists. If the lead-in to your list ends with a verb, no colon is necessary. '*The five priorities we established are*' would not require a colon after *are* since the list is needed to logically and grammatically complete the statement (see also example above). A lead-in like '*We have established the following five priorities*' would be followed by a colon, however, since the statement is grammatically complete.

If the items in your list are complete sentences and include internal punctuation, you should conclude each one with a full-stop. Otherwise, a full-stop at the end of your list is optional. Capitalizing the first listed item is up to you, unless each entry is a complete sentence. Whichever style of punctuation and capitalization you use, be consistent.

Another concern when writing lists is to maintain *grammatical parallelism* between entries. This simply means if some entries begin with a verb, all entries should do. This makes for smoother reading and logical neatness.

Express yourself clearly

Engineering is considered a precise discipline. When you write, do not force your readers to work harder than necessary to understand what you have written. There are some pitfalls to avoid:

Ambiguity. Ambiguity causes readers to see more than one meaning in your writing, and often results from permitting words like *they* and *it* to point to more than one possible reference in a sentence.

Vagueness. Vagueness causes readers to see no useful meaning at all. Try to avoid phrases like *pretty soon, substantial amount*, or *etc.*, and replace them with terms that have exact meaning such as *in three days,* or *8,564 CHF*.

Coherence. Coherence comes from the word *cohere*, meaning the quality of sticking together. Coherence on writing refers to how well paragraphs and even complex documents 'stick' together. In a coherent paragraph all sentences clearly belong where they are because they address only the topic of the paragraph and are logically connected to each other.


For more, go to Chapter on Academic style.

13

Writing paragraphs

General

"Paragraphs are the basic building blocks of academic writing" (Bailey, 2011, p.77). In this section we look at the components of paragraphs, how these components are linked together, and the linkage between paragraphs in the overall text.

A paragraph is a group of sentences that develops one theme or idea. The theme of one paragraph should follow logically from the theme of the preceding paragraph and should lead on to the theme of the subsequent paragraph.

Paragraph length

A rough guideline in technical writing states that paragraphs should not be longer than 12 lines, some will be shorter. If you are writing a manual or a set of procedures, most 'paragraphs' will probably be one-sentence directives such as *Move the pointer to the next slide and click again.*

Topic and supporting sentences

Reader-friendly writing follows a *general-to-specific pattern*. Normally the first sentence **(topic sentence)** introduces the topic. The topic sentence is the most important sentence in a paragraph; it acts as an "umbrella" that "covers" all the subsequent ideas. Other sentences **(supporting sentences)** may give definitions, examples, facts, restatements and summaries. **Concluding sentences** are especially useful if the paragraph is long and includes a number of examples and supporting evidence. Such sentences reiterate your point before you move on to the next paragraph.

exercise

Grafik

The parts of the paragraph are linked together by the **phrases and conjunctions** in **bold** in the right-hand column of the table. They guide the reader through the argument presented.

The information in paragraphs must flow easily from one sentence to the next. It is therefore important to structure your information clearly and signal exactly what you want to say by using **signalling words** (Table 5). They may be found at the beginning or within a sentence. Another way of connecting sentences is using **reference words.** (Table 6).

Table 5: Signalling words

Addition	as well as, besides, furthermore, in addition, moreover, nor, not only… but also, too, what is more
Cause and effect	accordingly, as a consequence, as a result, because (of this), consequently, for this reason, hence, in order to, owing to this, so, so that, therefore, this leads to, thus
Comparison	in comparison, in the same way, likewise, similarly
Contradiction	actually, as a matter of fact, in fact
Condition	if, in that case, unless, provided that
Emphasis	especially, importantly, indeed, in particular, mainly, particularly
Examples	for example, for instance, such as, as follows
Explanation	in other words, namely, this means, to be more precise
Generalisation	as a rule, for the most part, generally, in general, on the whole, usually, in most cases
Summary/ conclusion	finally, in brief, in conclusion, in short, in summary, overall, to conclude

Table 6: Reference words

Pronouns	he/she/it/ they
Possessive pronouns	his/her/their/hers/its/theirs
Objective pronouns	her/him/them
Demonstrative pronouns	this/that; these/those
Other phrases	the former, the latter/the first/the second/ such a

exercise

More linking phrases between sentences

Another way to show the connection between the ideas in the paragraph is to start the second or subsequent sentence with a phrase such as ‘this problem’ or ‘this situation’. These phrases help the reader to follow the line of thought by summarising the previous sentence. Other nouns typically considered appropriate to paraphrase instead of ‘problem’ or ‘situation’ are shown in Table 7.

Table 7: Examples of nouns used as linking devices with ‘this’ or ‘these’

account	advice	answer	argument	area	assertion	assumption
claim	comment	conclusion	criticism	description	difficulty	discussion
distinction	emphasis	estimate	example	finding	idea	improvement
increase	observation	problem	proof	proposal	reference	report
rise	situation	suggestion	view	warning		

exercise

For more useful phrases on guiding the reader through your text go to the Aacdemic Phrasebank 'Signalling transitions'.

14

Revising

General

Good writing tends to be largely a matter of good revising (Gastel & Day, 2017). Revising drafts requires taking a step back to see it more from the reader's perspective. ***Revising*** also means making *large scale changes* to the draft of your writing assignment. Changes during the revising stage typically involve re-developing and redrafting paragraphs, sections in your paper's main body, and parts of your introduction and conclusion.

While revising, you may have to return to the **planning stage** (Choosing "A piece of the pie") if you find that a sub-section of your paper is weak, and you may need to do some more reading, discussing, or brainstorming to generate ideas for drafting additional materials. You may also return to the **drafting stage** if you find that your assignment lacks organisation in part or overall.

By moving back and forth between the first steps of your writing (planning, drafting, revising), your central argument and supporting arguments will begin to emerge, and you will find that they are gradually strengthened.

Checklist for overall revision

A checklist for revising your work:

- Does your paper fulfil the formal requirements (length etc)?
- Does your paper answer all parts of the assignment brief?
- Does your paper have a clear research question or focus? Does it clearly state the purpose of the investigation?
- Do the individual sections of the paper have the right weight, i.e. is the paper well balanced?
- Is your paper clearly structured? Does the research question or purpose determine the red thread? Is the structure logical?
- Is your text coherent? Does the reader understand the link between each part and paragraph or are there any gaps?
- Have you included convincing evidence for each key point?
- Have you given full explanation of each point?
- Is each claim/ idea/ fact supported by evidence?
- Are quotes well integrated?
- Does every part of the text follow the conventions such as those for abstracts, introductions or conclusion?

Checklist for individual parts

Introduction/ Introductory Paragraph

- Have you provided enough contextual information to introduce your topic to the reader?
- Have you defined key terms?
- Have you narrowed and focused the topic?
- Have you introduced the main sub-sections?

Main Body/ Series of Paragraphs

- Have you created a strong thread of argument throughout your paper connecting the individual points/ paragraphs to your main focus?
- Have you created clear sub-sections? Is each introduced and summed up, with transition sentences linking each sub-section?
- Have you given evidence to support each point, with thorough explanations?
- Have you provided clear in-text citations for all sources?

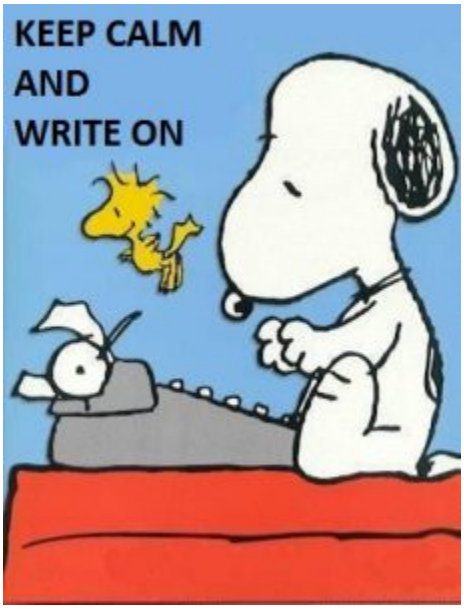
Conclusion/ Concluding Paragraph

- Is the focus of your paper reiterated and developed at the end of the main body section, just prior to the conclusion?
- Are the main points that you made in the sub-sections of the paper's main body summed up here?
- Are your conclusions opened out to apply to industry or professional practice if appropriate?

 Try these revision techniques:

1) Ask a friend to read the draft and comment on the quality of your main focus and supporting points in the light of the assignment brief.

2) After writing your first draft, give yourself a few days, then look again at the criteria and re-read the draft.



(source: AcademicHelp.com)

15

Editing & proof-reading

General

In contrast to revising, **editing** means making smaller-scale (often final) changes to your draft. **Proof reading** is more like a local revision and is mostly concerned with language and *how* the paper is written. This is equally essential to avoid small errors that make parts of your work inaccurate or even incomprehensible, and which might lower your mark significantly.

Check-list

Use the following check-list for *editing*.

Check list:

- Do I express my ideas clearly/ concisely?
- Is each paragraph unified, i.e. organized around one idea?
- Are my headings/ subheading informative?
- Are images and text connected?
- Are references correct (APA standard)? Consider in-text references and list of references.
- Are all sources listed in the list of references?
- Are any sources listed which have not been used in the text?

Is the style appropriate (e.g. level of formality)?

- Do I use academic and technical vocabulary when appropriate?
- Do I maintain a neutral 'voice'?
- Do I use active and passive voice appropriately?

Aspects for proofreading:

- Your presentation: typeface, font size (12 point Arial)
- Grammar (e.g. subject – verb- agreement)?
- Spelling or typing mistakes

- Punctuation
- Labelling of figures, tables and illustrations

 Use spell-checkers but be aware that they cannot replace your proofreading! The programme, e.g., does not know if you want to write about '*pacemakers*' or '*peacemakers*'. There are many words in English which are often confused because their pronunciation is very similar, such as *whole/hole* or *affect/ effect.* Make sure your final writing does not have any such mistakes.

 Try out this technique: before proofreading change the font and/or layout of your entire document. You might experience that you are able to spot mistakes you did not see anymore.

16

Layout requirements

General

This chapter provides some general guidelines when you decide on the formating of your text.

Chapter headings

Find clear, simple and informative headings.

Distinguish different levels of headings, e.g. fontsize.

Use either ***sentences case*** (start each heading with a capital letter; all other words in lowercase), or ***title case*** (initial letter of first word and first letter of each main word are capitalized; conjunctions *[and, or]* or prepositions [*of, in]* are not capitalized). Whatever style you use, be consistent.

Each chapter starts on a new page.

Numbering chapters

Use Arabic numerals (1, 2, 3) rather than Roman numerals (I, II, III).

 Only chapters (starting with Introduction) are numbered. Abstract, table of content, list of figures/tables, glossary, references, or appendices are not considered chapters and usually not numbered.

Space between lines and paragraphs

Make your document reader friendly:

- Leave space between paragraphs, or
- *indent* first line of each new paragraph.

font	• serif body fonts (e.g Times New Roman) are easy to read • sans-serif heading font (e.g. Arial, Helvetica) are recommended for headings/titles
font size	• 8-10 pts for longer citations indented as a separate paragraph • 11-12 pts for main text • 14-16 pts for headings/ titles the smaller the font, the lower the hierarchy
line spacing/ margin	• 1.3-1.5 pts • 2-3 cm margin

Lucerne University of Applied Sciences & Arts, School of Engineering & Architecture provides the following Guidelines for the layout of theses and project report (in German).

For **cover pages** of any report or thesis, the following information has to be provided:

- kind of work (project report, seminar paper, industrial report, Bachelor – or Master thesis)
- name(s) of authors (first name, surname)
- title/ subtitle of work
- name(s) of lecturer(s)/ coach(es)
- name of university
- name of module
- place/ submission date

Cover pages do *not* include the logo HOCHSCHULE LUZERN of the university.

Some courses might require additional information. Ask your lecturers about it.

IV

Writing the parts of scientific reports

General

As soon as you have finished planning and have written an outline, start writing first drafts of individual chapters or sections. Writing is a *thinking aid*. Do not wait too long but write as you go along with your project or research.

Be aware that the following sections do not follow the most usual sequence of *writing* the individual parts but are based on the *order* in which they appear in a report or thesis. Writing the abstract, for example, you will presumably postpone until the very end as it is the summary of the work done.

The aim of this chapter is to make novice writers aware and/or remind more experienced writers of the conventions usually followed within the academic community. Remember that you always write for a specific audience, with a specific purpose. Not only do you need to consider content aspects such as their knowledge about the subject or stylistic aspects but also your readers' expectations of how such texts are usually organized.

Therefore each sub-chapter guides you through the

- purpose of a particular part, such as the *introduction*
- the overall structure of this part
- language aspects of each part

 In addition, each section provides either examples and/ or additional activities.

Meta-language

Mauranen (1993, cited in Paltridge & Starfield, 2007, p.77) calls *meta-text*, text that 'talks about the text'. This is text which guides the reader through the text.

Meta-text enables the reader to anticipate what will come in the text (e.g. next section or chapter), for example: 'The chapter which follows will present the theoretical framework for the study (Paltridge & Starfield, 2007, p.78)'. At the end of long sections such text might summarize the contents of a chapter in overall terms, as in the following example:

> *The purpose of this chapter has been to test the findings of the first stage of the study as […] It has also presented an analysis of a number of specific-purpose texts as a demonstration of how the*

*framework in Chapter 4 can be applied to provide an explanation of genre assignment (*adapted from Paltridge & Starfield, 2007, p.78).

A link to the *Academic Phrasebank* is provided in each sub-chapter to help you guide your readers through your work by using ***meta-language***, which is the language used by authors to 'talk' about their text such as '*this section presents …*'

Note for students of architecture/ interior architecture

The writing you have to do for your studies can widely differ from conventions of scientific reports. However, sections on the *abstract*, *introduction* and the *conclusion* provide help with organising a reader-friendly seminar paper or a Bachelor/Master thesis. Conventions of *design project descriptions,* will be provided in an updated edition.

17

Writing the abstract & executive summary

General

This section first presents the purpose and features of abstracts and continues with showing the similarities of and differences between an **abstract** and an **executive summary**. Whether you write an abstract or an executive summary: they go at the front of your report, so they are the part your readers see first. However, they are written last.

source: hildabastian.net

Abstracts

Abstracts in published papers – and in reports or other manuscripts for your studies – have the following purpose: help potential readers decide quickly which articles are relevant to their needs, and worth looking at in more detail. Abstracts are now part of data bases which allow researchers to search and scan scientific literature. Some readers might only be interested in following up research done in their field without having to read the details. Abstracts 'compete for attention in on-line databases' (Glasman-Deal, 2010, p.197).

Purpose of abstracts: concise overview of

- Why you did the work;
- What you did and how you did it; and
- The main results and conclusions.

Typical abstracts:

- are short, usually less than 150 or 200 words, or 4-10 sentences.
- contain only the most important information.
- contain stand-alone qualities: they are like a miniature version of your work and can be understood without reading the paper.
- are mostly written in an impersonal style.
- do *not* contain figures, tables or quotations or references.
- do *not* contain abbreviations and acronyms.
- *never* refer to chapters, figures or tables contained within the report.

Overall structure

Since abstracts are mostly parts of scientific papers or reports they follow this model:

Background	1-2 introductory sentences place the work in context.
Problem/ Purpose	Brief description of the problem of the investigation and on the objectives of the work.
Method/materials	Outline of the methodology and tools used, how the study was undertaken.
Results/ implications/ applications	1-2 sentences stating the most important results and conclusions and/or recommendations and/or applications.

Process for writing an abstract

- abstracts are best written last or at least after a substantive part of the report is finished
- use the overall structure above as an outline
- start with key words for each section and then a first draft of your abstract
- refine your first draft a few days later, consolidating and reducing the text until you feel you have described all essential elements using as few words as possible

 **Language focus**

Abstracts use *impersonal* language using either phrases such as *'this paper investigates* (*not*: we investigated), or *passive voice.*

Start the abstract with ***present tense*** (this paper *investigates, aims at…)*

For the **methodology** you can use ***present tense*** but it is more common to use ***past tense (***a comparison *is,was made…* The data obtained are, *were evaluated using…)*

Results are expressed either in ***present*** or***past tense*** (a significant difference between XY *shows*, This *correlated* with…); often a combination of present and past tense is adequate when pointing to conclusions (the results *showed* that there *is*…)

Applications are often stated in ***present tense*** (this result *can be applied to-…)*

 **Vocabulary for abstracts** (adapted from Glasman-Deal, 2010)

Background	*a number of studies/ it is assumed/ it is widely known/ recent research*
Aim	*the aim of this study/ with the aim of/ to investigate, compare, examine*
Problem	*a need for/ drawback, disadvantage/ inaccurate, impractical, limited, time-consuming*
What the paper does	*(in) this study/paper/investigation/ adress(es), analyse(s), argue(s), compare(s), consider(s), dicuss(es), examine(s), extend(s), introduce(s), present(s), proposes(s), show(s)*
Method/materials	*was/were assembled, calculated, constructed, evaluated, formulated, measured, modelled, performed, studied, treated, used*
Results	*caused/decreased/had no effect/ it was noted, observed that…/ was/were achieved, found, identical, observed, present, unaffected*
Implications	*the evidence/ these results indicate(s), mean(s), suggest(s)*
Applications	*applicability/ can be applied, used/ make it possible to/ potential use/ relevant for,in*

Abstract or *Executive Summary*?

The main differences between an *abstract* and an *executive summary* are **audience** and **purpose.**

An **executive summary**, sometimes known as a **management summary**, is a short document or section of a document, usually produced for business purposes, summarizing a longer report or proposal or a group of related reports, in such a way that readers can rapidly become acquainted with a large body of material without having to read it all. It will usually contain a brief statement of the problem or proposal covered in the major document(s), background information, concise analysis and main conclusions.

An executive summary seeks to lead the reader to the significant points of the report as the reader is a decision maker who will have the responsibility of deciding on some issue(s) related to the report. The executive summary must be written with this need in mind.

Context of executive summaries

Engineers often have to communicate highly technical issues and concepts to clients in a manner that clients can understand and use the information, e.g. to improve their business processes. Means of communication is normally a written report.

High-level executives are usually interested in getting to the 'bottom line' without wading through many details. Most clients prefer an *executive summary* at the beginning of the report, where they find an outline of the situation, how the problem is being solved, planned activities, findings and recommendations. The remainder of the report contains the detailed analysis enabling the reader to gain more insight into any of the summary points, including flowcharts, tables, charts and other graphical means.

Research and report writing are common activities in business. They can be used to develop procedures, test products, explore markets or gather opinions. The results of research may be reported

orally or in writing, to internal or external audiences. Therefore, knowing your audience, applying the principles of business communication and selecting an appropriate format are also instrumental in preparing understandable, usable reports.

Types of business reports which often contain an executive summary: general business report/ business plan/ business proposal/ marketing plan/ strategic plan/ business analysis/ project report/ project review/ financial plan.

Executive summary

The executive summary is a brief version of the report; it restates each section of the report in abbreviated form with emphasis on findings, conclusions, and recommendations. Executive summaries *are standalone* documents. The reader must be fully informed.

A **typical** executive summary will:

- be possibly 5-10% or so of the length of the main report (this can be 10 pages for a report of 200 pages)
- be written in language appropriate for the target audience
- consist of short and concise paragraphs
- often have similar headings as the full report
- be written in the same order as the main report
- only include material present in the main report
- make recommendations
- have a conclusion
- be able to be read separately from the main report
- exclude references
- mostly exclude tables/ figures (maybe 1 or 2 are ok)

Overall structure of executive summaries

The structure depends on the document it summarizes. Therefore, this *could* be similar to an abstract but mostly contains more information:

- situation, context, background (what is the document about? Why is it important?)
- procedures/ methods/ materials
- findings/ solutions to a problem/ implications/ applications/ recommendations
- outlook

Process for writing an executive summary

- think about your **audience** (knowledge, interest)
- use the structure above as an outline or follow the structure of your document
- identify key sentences in the report
- extract them

- edit them for readability

 **Activity**: look at the examples of a good and poor executive summary. What exactly makes the difference? Compare your results.

18

Writing the introduction

General

The purpose of the introduction is to introduce the paper. If the problem of the investigation is not clearly stated readers will not be interested in your solutions. You should also aim at gaining the reader's attention. *Why* did you choose this topic, *why* is it important.

An introduction is like a roadmap from problem to solution (Gastel & Day, 2017), and has a 'funnel' shape, moving from broad and general to narrow and specific. Introductions are written in a flowing, reader-friendly style.

Many guides recommend writing your introduction when you have completed your research, similar to the abstract. However, since writing helps to focus your work it is a good idea to draft your introduction early and then to rewrite it as your project progresses. This helps you to remain focused and to establish the logical connections between the various parts of your research and the writing about it.

Length: Some guides provide an estimate of 10% of the total length of a paper for the introduction. In comparison to the other sections, the introduction is typically a much shorter chapter. However, if the introduction includes the project's background and/or the literature review as this is done in some disciplines, it will be much longer.

Overall structure und useful phrases

Why?	***Rationale/ nature of problem/ scope*** Begin your introduction by explaining the importance of your research by providing some context. Provide the reader with a brief description of the background, which can include some details of past investigations. In a project report this can already lead to a problem in the field of your topic. ***Useful phrases*** • *Much research in recent years has revealed/shown/ calculated/ found …* • *The major current focus…..* • *The importance of reducing carbon dioxide emissions has increased in the last 10 years.* • *Much research in recent years has focused on carbon nanotubes*
So what?	***Scope*** The above is often followed by outlining current research, what has been done so far and what is missing. This missing part is often referred to as the 'gap' in research (e.g. Swales & Feak, 2009), which then is the reason for you to carry out a certain project or to fill this gap with your research. State a clear focus, which can be formulated as a research question. In a project report or bachelor/master thesis of engineering students: state the aim or objectives, and why they are necessary. State the limitations of your research to clarify the focus. This part also often includes information on methods used to carry out your research. In some disciplines it is standard practice to inform the reader about the principal results and conclusions. ***Useful phrases:*** • However, few studies have focused… • Previous research has overlooked/ ignored, underestimated/ failed to consider… • No studies/data/ calculations… • Few studies/attempts…. • None of these studies…. • It remains unclear… • The aim of this report is to give….. • Therefore, this study investigates how/why etc… • The primary focus of this study is on…
Where?	***Final part of introduction*** At the end present the logical structure of the report/ thesis, including chapter numbers/titles, how these parts are connected, and a very brief description – 2-3 sentences of their content. ***Useful phrases:*** "The objectives are defined in Chapter 2. In Chapter 3 the relevant theory is described, with supporting details provided in Appendix A. Chapter 4 deals with the experimental procedure and has five main elements, which are…" (Young, 2009, p.109).

Language focus

Tenses *used in introductions:*

Use *p**ast tense, present perfect*** for providing the context.

Use ***present tense*** or ***past tense*** for the focus.

Use ***present tense*** for the organization of the paper.

Activity for intro_with key

For useful phrases to introduce the reader to your text go to the Academic Phrasebank, Introducing Work.

19

Writing the methodology chapter

General

The title of this chapter can vary, such as *Procedure(s)* or *Experiments* or *Materials and Methods*, depending on the discipline, the project or subject of the study. The location of this chapter within a paper can vary. In a simple thesis it typically precedes the Results chapter. In a project report there might not be a separate chapter with the title 'Methodology", but this might be part of the description of the project tasks or research design.

 **Methodology vs methods**: It is important to understand the difference between these two. The *methodology* refers to the theoretical framework and explains why certain research methods have been chosen. This can involve assumptions on why the chosen methods are expected to be successful. *Methods* describe the actual research instruments and materials used, such as interviews or specific measurements, to collect and analyse data.

Purpose of the methodology section

Overall, the purpose of this section is to provide the reader with information on the methods used to answer the research question (s), to achieve the objectives of the projects. Another important aspect is the justification for each method, which means why they were used, and also how. This involves a restatement of the research aim/ objectives and explains to the reader how the chosen research method (s) help answer the research questions. At this stage ethical issues or limitations of the research can also be stated.

In other studies, the primary goal of this section is to convey to the reader the validity of the research which has been undertaken. The reader must be able to replicate the experiment and obtain essentially the same result.

Writing up the methods

In social science readers are often not only interested in the findings but in the methods you used to obtain them such as how you chose your sample, how representative it is, the questions posed in the survey or asked in the interview. The method section then becomes a detailed account of the steps undertaken in your research. Methods sections of projects using a non-experimental approach most likely have the three components of *description*, *explanation* and *justification* of data and method.

Therefore, the methods section fulfills three purposes (Lea, 2014):

1. **Describe** the data and method(s) used
2. **Explain** how the data were collected and how the method (s) were employed in the research
3. **Justify** why the data were collected and why particular methods were chosen.

Overall structure

The overall structure follows the general-to-specific pattern, and also the logical organization of your project.

Introduction	Provide overview of the entire section; restate overall purpose of the investigation; review of research aims.
Why (not)?	Rationale of choice of research methods including strengths and weaknesses of different methods (here you might refer to other research or methodological literature). Mention other methods you could have used if you had been able to do so.
What and when?	Overview of methods or overall design of experiment: the order should help the reader to understand how methods are connected, built on each other and to understand the process of your research.
How?	Description of methods and/or materials (description of experiment, field or laboratory equipment, calculations, simulations, software, procedures, statistical treatment, considerations of sampling and design techniques for surveys and interviews)
How?	Details on how data are processed, evaluated, how the results are calculated (statistical treatment, other assessment instruments with clear justification of why this method is used)

Language focus

Use **present tense** to restate the aim/ purpose of your paper: *this paper investigates the effects….*

Most parts of this section use **past tense** + passive:

***How* it was done** (passive voice + by ….. ing): the test **was carried out by using** a saturated solution of …

***Why* it was done** (passive voice + to + verb): the …. **was used to measure**…

Use of sub-headings

This section often has *subheadings* which should, whenever possible, match those to be used in the results section.

Describing sequence

Sequence, or order, is important in describing processes. The table below shows some common expressions.

first	the first step is..	to begin with	initially
beforehand/ before this	at the same time	during	after this/ later
secondly, thirdly, etc.	next/the next step is…	subsequently	in the following stage
following this	lastly/ finally	the last stage	the last step is to

You may also want to explain:

how something is done: • slowly/ carefully • with care/ precision • in a careful way/ manner	or *why* something is done: • so as (not) to… • so that… • in order (not) to…

 For useful phrases and ***meta-language*** to lead the reader through your methodology section go to the Academic phrasebank, Describing Methods.

20

Writing the literature review or background chapter

General

The more advanced you are in your studies, the more important it will be to make the connection between your own research and the research of others. Therefore, when you begin a project or have identified a research question, you usually go and search for relevant work done by others.

The *literature review* consists of two parts (Ridely, 2012): the finished *product* which is part of a thesis and the *process* which is searching and critically reading the *work done by others, which is often called literature search* or in this book *literature–based research*. So, the purpose of what is called *literature review* is initially often to read around the subject, to explore the field and gain a thorough understanding of current work and perspectives. However, this reviewing of literature is an ongoing activity and lasts until the day you complete the final draft because understanding and comparing with existing literature can help you to analyse and interpret your results.

Purpose of the literature review

The purposes of a literature review can be summarized as follows:

- To provide a historical background for your research.
- To explore the current context in which your research is situated by referring to debates, issues or questions in the field, which helps to show the significance of a problem for research.
- To identify a discussion of relevant theories and concepts, which you then will probably draw on.
- To gain an overview of relevant methodology or methods used to collect and analyse data in a particular field.
- To clarify and introduce relevant terminology to be used in your research.
- To identify relevant research and to show how your work extends or challenges it.
- To establish a gap in the work in the field.
- To provide supporting evidence for a problem or claim.

When is a specific literature review chapter required?

Even though no research can be done without knowledge of and referring to relevant research of others, your (primary) purposes and whether you will write a dedicated chapter with the title *Literature review* depends on the kind of research project and the conventions within your discipline. There is for

example a significant difference between applied and theoretical research, where more extensive and critical literature reviews are expected. There are further significant differences between research done at the beginning of your university studies or for a BA, BSc, MA, MSc or PhD thesis. For a Master or PhD thesis a high level of awareness of the research done in your field and deep and broad discussion of it is expected.

However, the insights from your literature review will strongly influence the content of other chapters, such as the *Background* (if you include such a section in your study) or the *Methodology section*. As already mentioned, you very often refer to theory (i.e. literature) when analysing and interpreting data in the *Discussion section*.


Note: the decision if you need a separate literature review chapter has to be made at an early stage of your work, namely when you decide and draft an outline of the structure of your paper. If you change your mind at a later point, this will lead to numerous shifts in numbering and relocation of the pertinent information.

Overall structure

If you include a separate chapter with the title literature review, you can follow the principle below. As always organize your writing along a general-to-specific pattern:

Introduction	Restate the aim/objectives of your research Explain how this section is organised
Headings/ subheadings of the main themes	Summarize, synthesise and evaluate research done by others. The order of these sub-sections could be based on a certain line of argument or start with the most important questions/ issues. Every item of this review must be closely connected to the aim and objectives of your research.


Since the process and the product literature review consist of evaluating the work of others and connecting your work to theirs it is vital to adhere to academic conventions of citing and referring to them correctly. This important convention shows "the interactive nature of research writing" (Ridley, 2012, p.119) and that you become part of a research community. For details of the '*whys*' and – which is often more problematic- the '*hows*' of these conventions, go to Chapter 6, Avoiding Plagiarism.


For useful phrases to lead your reader through the literature review, go to the AcademicPhrasebank, Referring to Sources.

21

Writing the results chapter

General

This chapter is sometimes called ‘Analysis’, or ‘Data analysis’. For your readers this might be the most important chapter, the core of your work, together with the subsequent or integrated discussion.

Purpose of the results section

However your work is organized, there is always a presentation of the results and findings. This presentation is not only an objective description or compilation of raw data (which are placed in the Appendix), but a summary of your data based on a line of argumentation and evaluation. The author of the results section already undertakes a certain selection, organisation and guide the readers to the understandings they wish them to come to. Therefore, the writer must “draw out the significance of the data, highlight significant trends and comparisons, keep indicating the reader where in the data he or she is being led” (Paltridge & Starfield, 210, p.135). In science and engineering there is a strong visual element in forms of tables, graphs or other figures, which have to be clearly connected to the text to enhance the reader’s understanding of the argument that is being built up.

Even though the results section is the core of your paper and/or presents something new, it is often the shortest chapter. The previous parts (introduction, methodology) explained why and how you reached the results, and the subsequent chapter – the discussion – explains the significance of the results. Most important is that the results are presented with utmost clarity.

Overall structure of the result section

Depending on the kind of study you are undertaking, sometimes also on the discipline, you find a variety of options of how to write up this section, and you have to make choices. For example, whether to have a separate chapter with the title *Results* (or *Findings*), where to locate this section within your paper, how to structure it or whether you integrate the results/ findings in the Discussion chapter. These are the decisions to be taken when organising the structure of the paper and when writing the outline. However, during the course of your research you might realize that the results differ from what you expected at the onset of your project or that your original outline does not allow for the elaboration of the results you actually obtained. This means you have to develop or maybe revamp the overall structure of your paper in the course of the work. For more go to the chapters on Outlines and/or Structure of academic texts.

Data commentary

The results of engineering research are usually presented in tables and figures. For more information on the rationale for adequate visual aids – whether for instance to use a table or a graph – and aspects to consider when creating them, go to the chapter on Using non-text material. However, tables and figures do not simply speak for themselves but you have to communicate to your readers what e.g. numbers and quantities mean; you also want your readers to accept your conclusions, which should follow logically from your results. If you do not comment on the results, your reader might interpret them differently, and your conclusions might appear rather strange or surprising.

The purpose of data commentary

Typically, a data commentary will include at least three of the following elements:

- Highlight the results.
- Assess standard theory, common beliefs, or general practice in light of the given data.
- Compare and evaluate different data sets.
- Assess the reliability of the data in terms of the methodology that produced it.
- Discuss the implications of the data.

The overall structure of data commentary

Data commentaries usually have the following elements in this order:

Location elements and/or summary statements

Example:

"Table 5 shows the most common sources of computer virus infection for U.S. businesses."

These summary statements can be considered as a kind of *metadiscourse* – sentences and phrases that help readers make their way through a text by revealing such things as organization, referring readers to relevant parts of a text (Swales & Feak, 2004, p.117).

Highlighting statements

Example:

"As can be seen in a great majority of cases, the entry point of the virus infection can be detected with e-mail attachments being responsible for nearly 9 out of 10 viruses."

Highlighting statements are usually ordered from general to specific. Such statements are generalizations drawn from the details of the data display. Such statements need good judgement. They demonstrate that you

- can spot trends and regularities,
- that you can separate more important findings from less important ones,
- that you can make claims of appropriate strength.

So, do NOT

- simply repeat all the details in words,
- attempt to cover all the information, or
- claim more than is reasonable.

Examples of ***discussions of implications, problems, exceptions, recommendations:***

This very high percentage is increasingly alarming, especially since …

In consequence, e-mail users should …

In addition …

While it may be possible to lessen the likelihood of downloading an infected file, businesses are still vulnerable ….

Sometimes your data may not be quite what you expected. Try to find explanations or suggestions what work could be done in the future to overcome the problem that your research did not yield the desired data.

Language focus

Use **present tense** to draw your reader's attention to something but then use **past tense** when commenting on results or data found ("Fig 1 indicates that 50% of the XX was …")

Location elements and summaries:

Location elements help readers navigate a text by referring to relevant parts or establishing logical connections. According to Swales and Feak (2004, p.121) the verbs in table 8 below are most commonly used in references to visuals.

Table 8: Verbs to refer to visuals

Active verbs in references to visuals	Passive verbs in references to visuals
shows (ca. 50%)	shown in
presents (ca. 15%)	presented in
illustrates (ca. 12%)	illustrated in
summarizes	summarized
demonstrates	given in
contains	seen from
provides	provided in
depicts	listed in
lists	predicted by

An interactive or media element has been excluded from this version of the text. You can view it online here:
https://ebooks.hslu.ch/academicwriting/?p=82

Making appropriate claims:

As soon as authors start to evaluate their results in the data commentary, they make claims or assumptions about their meaning and significance. They will also refer to other research done in the field, compare findings with previous findings, or start making comments on the strengths and weaknesses of their findings. Researchers have to keep asking themselves how confident they can be about their findings and conclusions. To express the right degree of confidence is a skill that has to be learnt by writers of research papers. Go to the guidelines for using modifying and intensifying language so that you know when to use *"There is a strong possibility..."* or *"It can therefore be assumed that..."*.

For useful phrases to lead your reader through the results section (***meta-language***), go to the Academic Phrasebank, Reporting Results.

22

Writing the discussion chapter

General

This section is as important as the previous one – the results section. It is often the most difficult to write. In some papers this part is the final section, which means it ends with a short summary or conclusion regarding the significance of the work.

In this section you analyse and explain findings. Were they what you expected? Were they consistent with your hypothesis, your aim and objectives? Did they fit the theory or seem to disprove it? How are they significant? It is important to keep an open and objective mind. For your project – and your supervisor – it might be more important that you understand the significance of your results than that your hypothesis is proved right or wrong.

While the results section is more descriptive (focus on facts), the discussion section is more interpretive (focus on points). Discussion sections should be more than summaries, they must go beyond the results because they do not recapitulate but *discuss* them. They should be more theoretical, abstract, general, more concerned with implications or applications. And: the discussion should indicate whether the results provide a solution to the problems (aims and objectives) stated in the introduction. In the discussion you also note strengths and limitations of the investigation.

Overall (possible) structure of this section

Paragraph 1: ***Background information on the study***	Step 1: Restate the purpose of your study (e.g in this paper I have investigated../ the main purpose of this paper has been to....) Step 2: Summarize/ highlight the main findings Step 3: Point out the value of your study (optional)
Paragraph 2/3/4/etc: ***Discussing the findings***	State the findings (compulsory) Possible steps: • Compare the finding with other studies • Explain the finding by providing an example • Interpret your data by making suggestions as to why your results are as they are (Hypothesise on specific findings) • Highlight weaknesses • Point to recommend a course of action and/ or identify useful areas of further research • Anticipate and deal with potential criticism

Language focus

Whereas statements in your results section may be quite *specific* and closely tied to data (e.g. *'As can be seen in table 1…'*), statements in the discussion section can be more *general* (use e.g. *overall, in general, on the whole, the overall results indicate, with one exception the….)*

Language focus dealing with limitations

Limitations are not weaknesses of your study but the question is what cannot be concluded.

- It should be noted that this study has been primarily concerned with …
- This analysis has concentrated on …
- The findings of this study are restricted to …
- The results of this study cannot be taken as evidence for…

See also Language focus of the next section, Writing the conclusion & recommendations.

For useful phrases to lead your reader through the discussion section (**meta-language**), go to the Academic Phrasebank, Discussing Findings.

23

Writing the conclusion & recommendations

General

There are probably some overlaps between the *Conclusion* and the *Discussion* section. Nevertheless, this section gives you the opportunity to highlight the most important points in your report, and is sometimes the only section read. Think about what your research/ study has achieved, and the most important findings and ideas you want the reader to know. As all studies have limitations also think about what you were not able to cover (this shows that you are able to evaluate your own work objectively).

Possible structure of this section:

Summary of the findings	Restate briefly the work carried out, the aims and hypotheses or research questions. Highlight the most important findings.
Evaluation of the study	State what you consider to be the achievements and limitations of your work. Assess how far the aims of your research have been satisfied. Here you can include a personal assessment of what you have learnt (if you are asked to provide it)
Suggestions for future research	Suggest how your work reported in this paper opens new research possibilities.
Implications of the study	Place the study in a wider context of research in the discipline and/ or a situation in the real world.
(positive) **Applications of the research**	Indicate how the research may be practically useful in real-world situations
Recommendations	Give specific suggestions for real-world actions to be taken on the basis of the research.

 ***Language focus***

Use ***present perfect*** to sum up/ evaluate:

This study *has explored/ has attempted…*

Use ***past tense*** to state what your aim was and to refer to actions you carried out:

- This study was intended to analyse …
- The aim of this study was to …

Use ***present tense*** to evaluate your study and to state the generalizations and implications that

you draw from your findings.

- The results *add* to the knowledge of …
- These findings s*uggest* that *…*

You can either use **present tense** or **past tense** to summarize your results.

- The findings *reveal* …
- It was *found* that …

 ***Language focus*** when making an evaluation of your work

Achievements of this study (positive)

- This study provides evidence that …
- This work has contributed to a number of key issues in the field such as …

Limitations of the study (negative)

- Several limitations should be noted. First …

Combine positive and negative remarks to give a balanced assessment:

- Although this research is somewhat limited in scope, its findings can provide a basis for future studies.
- Despite the limitations, findings from the present study can help us understand …

 ***Language focus*** when giving suggestions for future resarch

Use more cautious language (modal verbs may, can, could)

- There are a number of *possible* extensions of this research …
- The findings suggest the **possibility for** future research on …
- These results **may be** important for future studies on …
- Examining a wider context **could/ would** lead …

Or indicate that future research is needed

- There is still a **need** for future research to determine …
- Further studies **should** be undertaken to discover…
- It would be **worthwhile** to investigate …

 For useful phrases to lead your reader through the conclusion section, go to the Academic Phrasebank, Writing Conclusions.

24

What goes into the appendix?

General

In the appendix (plural: appendices) you include relevant supporting information that is not *essential* for the comprehension of the main report such as all the important results. This could be, for example, drawings, extra photographs, detailed raw data summarized in the results section, large amounts of numerical data which would otherwise interrupt the flow of your text and arguments. Material such as standards available in the public domain do not go in the appendix.

 The appendix is not a “dumping ground for bits of unwanted text that you could not find space for in the main report” (Young, 2009, p.16).

 Make sure that you refer to all the items placed in the appendix in your main report. For example:

- Details are provided in A1.
- See A1.
- (⇒A1)

If you cannot refer to them, you do not need them.

Overall structure

Appendices need a clear structure. You can separate the material into sections or themes. Young (2009) recommends creating individual appendices. For longer appendices create a separate table of content.

Each appendix should have its own title with a number or letter (e.g. A, B, C or A1, A2, A3 or Appendix 1, Appendix 2 etc).

If you include tables and figures, start a new sequence (Table 1, Table 2, Fig 1, Fig 2 etc).

Start each appendix on a new page.

V

Academic style guide

General

English has become the international language of science and academic publications so that findings are accessible to a broad audience. This section is primarily for readers who are non-native speakers of English. However, native-English-speaking students and scientists may also find it very useful.

What is academic style?

Regardless of the type of academic writing, your style of writing should be the same: clear, concise, with appropriately referenced ideas. Moreover, your writing should be accurate, impersonal and objective. This chapter gives guidelines for appropriate style: the level of formality, academic vocabulary, language of caution and the use of passive verbs.

Each of the following sections focuses on one aspect of academic style or vocabulary, and provides additional handouts with *activities*.

25

General guidelines

General

There are no rules for academic style that apply to all situations. The following ten guidelines should help you develop a style of your own.

1) Do not use idiomatic or colloquial vocabulary: *kids, boss*. Instead use standard English: *children, manager.*

2) Use vocabulary accurately. There is a difference between *rule* and *law*. In your course of studies, you must become familiar with the appropriate use of terminology and concepts.

3) Be as precise as possible when dealing with facts and figures. Avoid phrases such as *about a hundred/ years ago*. If it is necessary to estimate numbers, use *approximately* rather than *about.*

4) Conclusions should use tentative language. Avoid absolute statements such as *unemployment causes crime*. Instead use cautious phrases: *unemployment may cause crime* or *tends to cause crime*. For more go to section on **caution**.

5) Avoid ***emotive*** language which shows your personal attitude: *luckily, remarkably, unfortunately, surprisingly* (unless you are writing reflectively).

6) Do not contract verb forms: *don't, can't*. Use the full form*: do not, cannot*.

7) Although academic language tends to use the passive more than standard English, it should not be overused. Both are needed. Use active and passive voice deliberately. See also section on

passive verbs.

8) Avoid the following:

- *like* for introducing examples. Use *such as* or *for instance.*
- *thing* and combinations such as *nothing* or *something*. Use *factor, issue, aspect*
- *lots of.* Use *a significant/ considerable number*, or *a majority of*
- *little/ big.* Use *small/ large.*
- 'get' phrases such as get better/ worse. Use *improv*e and *deteriorate*.
- *Good/ bad* are simplistic. Use *positive/ negative*, e.g. *the changes had several positive effects*.

9) When writing **lists**, avoid using *and so on, etc*. Insert *and* before the last item. If you need to point out that your list is not comprehensive, introduce it with a linker such as *for instance.*

10) Avoid using two-word verbs (phrasal verbs) such as *go on* or *bring up* if there is a suitable synonym. Use *continue* or *raise*. Phrasal verbs tend to be informal.

26

Objective language

General

Written academic language is in general objective rather than personal. It therefore has fewer words that refer to the writer or to the reader, and avoids using first person pronouns. This means that the main emphasis is on the data and on the arguments. Examples of objective and impersonal language:

- *This report attempts to…*
- *It is worthwhile to consider…*
- *The data indicate that…*
- *More concrete evidence is needed before …*

 Go to Activity for objective language versus subjective language

27

Using the passive voice

General

Whether to use the *passive voice* or the *active voice* is a topic of most guidebooks on scientific writing. Overall we can say that the active voice is more concise, more direct and easier to read. However, in your academic studies you will often come across and are required to use the *passive voice*. For example:

> The results are summarized in the table below (passive: use of 'be' + past participle)

> *not:* we summarized the results in the table below.

The passive voice is used because technical reports or scientific manuscripts are impersonal. The content is separate from the personality of the writer. Even though this often leads to wordy formulations such as *It is known…* rather than *We know…*(three words instead of two), you will see the impersonal *passive voice* in many publications.

However, it is not merely a question of changing an active into a passive sentence: in the methodology section for example the passive voice serves to emphasise the process rather than the agent such as in *Twelve experts were interviewed to…* The emphasis here lies on the experts and not on the person who conducted the interview.

Language focus

> Formulations such as *'this paper presents …', 'this study aims at …'* use active voice but are perfect examples of impersonal language.

> Be careful when using *'It is assumed that …'* or *'It is believed that …*': it may not be clear if this is a statement about widely made assumptions or a held belief or your personal evaluation. You can avoid this by writing: *'The team assumed…*, or *'The author was of the opinion'.*

28

Modifying and intensifying language

Cautious language/ evaluating statements/ showing confidence

In any kind of academic writing it is necessary to make decisions about your stance to a particular subject, or the strengths of claims you are making. It is unlikely that the evidence you present will be conclusive enough for you to state that something will definitely happen. At the same time, you need be careful about making sweeping statements which do not consider exceptions. This is why academic writing often calls for a *cautious* style. These rules are especially important when commenting on data, discussing implications or drawing conclusions from findings.

There are various ways in which caution can be expressed. This includes appropriate modal verbs (e.g. *may, might, could*), other lexical verbs (e.g. *suggest, appear*), tentative cognition verbs (e.g. *believe, think, consider*), adverbs (e.g. *frequently, usually*), adjectives (e.g. *possible, likely*) and other lexical items (e.g. *to our knowledge*).

You can show your attitude to the viewpoints, sources of evidence that you have presented. The word that you choose in these two examples will alter the strength of the claim you are making about the relationship.

Caution in verbs

When referring to sources, the verb used indicates the degree of caution.

Compare:

Tilic (2004) ***states*** *that the cost of living …*

Tilic (2004) ***suggests*** *that the cost of living …*

Compare:

Research ***proves*** *that we possess at least four forms of memory* (Martin et al., 2007, p.304).

Research ***suggests*** *that we possess at least four forms of memory* (Martin et al., 2007, p.304).

Compare:

Nowadays Business studies ***have*** *more importance*.

Nowadays Business studies ***appear to have*** *more importance.*

Other verbs which imply tentative or cautious findings are:

think/ consider/ hypothesize/ believe/ claim/ presume

You can ***evaluate*** your statements and show your attitude in either a positive or a negative way.

Compare:

Poor driving conditions lead to accidents.

Poor driving conditions **frequently** lead to accidents.

You can ***modify*** your claims using the following words and phrases:

Adjectives	*e.g.* important, misguided, inaccurate, incorrect, remarkable, surprising ***Example****:* Intelligence testing has a long and ***controversia****l* history.
Adverbs	e.g. accurately, unfortunately, inappropriately ***Example:*** Such drugs have been ***inappropriately*** prescribed and…
Nouns	e.g. difficulty, problem, crisis, shortcoming, assumption ***Example:*** The ***difficulty*** lay in the fact …

Showing confidence

You can show your degree of confidence in your claim by:

- Showing caution in your claim through the use of hedges such as ‘probable’, ‘might’, ‘may’, ‘possibly’
- Showing confidence in your claim by using boosters such as ‘definite’, ‘will’, ‘must’, ‘obviously’, ‘clearly’.

Example: *It is clear* that schools need to introduce sport at a young age. (shows confidence)

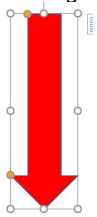
Although your evidence may strongly support your argument, in academic writing the sentence may be expressed more cautiously with the use of a modal word such as ‘may’.

You can use various verbs, adjectives or adverbs to show your degree of confidence as shown below:

Verbs	*e.g.* will, may, might, could
Adverbs	*e.g.* certainly, definitely, probably, perhaps, obviously
Adjectives	*e.g.* certain, definite, probable, possible
Signalling phrases	*e.g.* it may be possible…, it could be …, there is chance that,,,. In general …

Probability

There are many ways of expressing probability in written academic English. Notice how the phrases below weaken in strength.

stronger  weaker	• It is certain that • It is almost certain that • It is very probable/ highly likely that • It is probable/ likely that • It is possible that • It is unlikely that • It is very unlikely that	sleeping 7-9 hours each day will result in better academic performance

Distance

Distance is another way of removing yourself from a strong claim. Compare the following.

- The company ***has*** benefitted from …
- The factory ***seems to*** have benefitted from …
- The factory appears to have benefitted from …
- It is said that the factory seems *to* have benefited from …

Swales and Feak (2013, p.127) point to an alternative strategy to distance yourself from the data by showing in some way that it is “soft”. **Examples**:

- *According to* this preliminary study …
- *In the view of some experts …*
- *Even though the data is limited*, some research suggests …

A cautious style is necessary in many areas of academic writing to avoid making statements that can be easily contradicted:

- Demand for healthcare **usually** exceeds supply.
- **Most** students find writing exams difficult.
- House prices **tend to** fall as societies get poorer.

Areas where caution is particularly important include:

a) Presenting a hypothesis that needs to be tested (e.g. in the introduction).

b) Discussing the results of a study, which may not be conclusive.

c) Commenting on the work of other writers.

d) Making predictions (Normally *may* or *might* are used).

One way to express caution is to use **modifiers**: *fairly, rather*, or *quite* before an adjective:

- A fairly accurate summary
- A rather inconvenient location
- Quite a significant discovery

 Activity for modifying and intensifying language

 More guidelines on Cautious language can be found in the Academic Phrasebank.

29

Academic vocabulary

General

Good academic writers carefully think about their choice of words. The 'Plain English movement' argues for a less formal style of language such as a simpler range of vocabulary avoiding jargon. However, academic or scientific writing must be concise, accurate and unambigious. Remember, you always write for a specific audience and readers of academic and scientific texts expect you to follow certain conventions.

Useful vs useless jargon

There is useless jargon, also called *technobabble* or *scispeak,* often used with the intention to impress the audience. The problem arises when no communication takes place because your audience does not understand you. Each discipline uses technical terminology to communicate and as a novice writer you are expected to become familiar with and use this jargon. Experts need specialized jargon (Beer & McMurrey, 2014, p.30). However, you might not always write for this specific audience and need to explain terms whenever necessary.

Academic word list

To read and write academic texts effectively you need to become familiar with the rather formal vocabulary used in this area. This section provides an overview. If you wish to develop your academic vocabulary, study the Academic Word List (AWL), a list of 570 items commonly found in academic texts across various disciplines, created by Averil Coxhead.

 Here are some links to websites to practice academic vocabulary. Andy Gillet's Using English for Academic Purposes in Higher education, or another AWL gap fill exercise by AcademicEnglishUK. Quizzes with the AWL.

In each chapter on Writing the specific parts of reports a link to the Academic Phrasebank is provided, a very useful resource for both native- and non-native speakers of English.

 **Language Focus**

Word families

One effective way of learning vocabulary is learning word families (*adjective, noun, verb*), such as in the list in the box below:

adjective	noun	verb
• achievable • acquired • analytical • creative • derived • hypothetical • indicative • reliable • responsive • significant	• achievement • acquisition • analysis • creation • derivation • hypothesis • indication/ indicator • reliability • response/ respondent • significance	• achieve • acquire • analyse • create • derive • hypothesise • indicate • rely • response • signify

Academic adjectives

The following adjectives are best understood and learnt as opposites. Not all opposites can be constructed using *pre*fixes such as logical/ **il**logical.

• absolute • abstract • logical • precise • rational • relevant • subjective • theoretical	• relative • concrete • illogical • vague, approximate, rough • irrational • irrelevant • objective • practical, empirical, pragmatic

For ***reporting verbs*** used in writing about previous research such as 'The survey results *indicated* that …' 'The authors *confirmed* …' go to the section on in-text references.

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How to write numbers, units and abbreviations

General

This section provides some guidelines on writing numbers, units and dealing with abbreviations in scientific writing.

Numbers

In scientific writing the following conventions apply to using words (one, two, three etc) instead of numerals (1,2,3 etc) in passages of continuous text (i.e. not in tables, figures or footnotes).

Write out all whole numbers: smaller than 10 (zero-nine), all other numbers are written as numerals.

Example

This was repeated four times

The results were 10 times better

Exceptions

- Never start a sentence with a numeral; either write it as words or recast sentence.
- Numbers that are results of calculations or measurements appear as numerals.
- Values with units (1 minute) appear as numerals
- Two adjacent numbers: spell out one of them (twelve 3 m beams, twenty-three 10 g samples)
- Numerals are used when a number less than 10 appears in a range or list with higher numbers (‘4, 11 and 17’ *not* ‘four, 11 and 17’)
- Numerals are used for numbered elements of documents (Chapter 1, page 9).
- Hyphenate spelled out compound numbers (twenty-three calculations are required)
- If the numeral zero could be confused with the letter O, or the numeral 1 with the letter l, spell them out.

For more specific details go to

Units

Most style manuals recommend putting a single space between a numeral and a unit: 1 m (*not*: 1m).

Exception: there is no space between numeral and superscript-type unit symbol (10^2, 4ii, 15')

However: when used as a measure of temperature it is recommended to keep the space (10 C).

Important: these guidelines are a matter of style preference. Select a style for your report and use it consistently.

Use the same symbol for singular and plural (2 kg not 2kgs).

Activityadapted from Get in Write, 2003.

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Abbreviations

Abbreviations (short forms of words, e.g. Am.E.), acronyms (words formed from initial letters of several words, e.g EU) usually require explanation.

1) The general rule is:

> Write an abbreviation out in words when you use it for the first time, followed by the abbreviation in brackets, for example Lucerne University of Applied Sciences & Arts (HSLU); thereafter use the abbreviation.

Reader-friendly documents can repeat this principle for each new chapter provided you use abbreviations your potential reader is not familiar with.

2) When the abbreviation or acronym is widely understood (e.g., DNA, NATO), you do not need to write the full name but you can include it in the list of abbreviations.

3) Whether to use *a* or *an* before an abbreviation depends on the pronunciation of the first letter: *a* CD, *a* UN reporter saw *an* UFO, *an* ISBN, an SMI index result.

Commonly used abbreviations

Many abbreviations are widely used in documents and do not require a definition, such as:

- e.g. = for example
- et al.= and others
- etc. = and so forth
- i.e. = that is to say
- fig. = figure
- min. = minimum
- max. = maximum
- n.d. = no date
- p. = page

Days of the week and months are spelled out in the text, but in notes, figures, tables abbreviations can be used.

Writing the date: Using numerals can cause misunderstandings, such as in 2/8/2016, which can be read by Americans as February 2, 2016 or as 2 August 2016 by Europeans. Therefore, spell out the month.

Writing the time: write 9:00 A.M. or 9 am when using a 12-hour system, and 15:20 (15h20) for the 24-hour system. Add noon or midnight after 12:00 to avoid miscommunication.

Titles and degrees: Social title (Mr., Mrs, Ms.) are abbreviated when preceding a name (periods/ full stops can be omitted).

List of abbreviations (section)

- Alternative headings: *nomenclature, abbreviations and symbols*.
- Located: usually placed *after* the table of contents and the list of figures/tables.
- Usually (this is a recommendation) this list is alphabetical, uppercase letters are followed by lower case letters; at the bottom of the list of special symbols.

VI

Avoiding plagiarism

General

Good scientists build on each other's work. They do not, however, take credit for others' work (Gastel & Day, 2017, p.26). If you include information or ideas that are not yours, make sure you refer to or cite the sources. Otherwise you will be guilty of plagiarism, which can be defined as "the unacknowledged use of another's work as if it were one's own" (University of Dundee, 2005).

Alongside other forms of academic dishonesty, universities regard intentional plagiarism as a very serious offence. Check the guidelines provided by Lucerne University of Applied Sciences& Arts (German version).

The concept of 'work' in the definition of plagiarism given above includes ideas, writing or inventions, and not simply words. The notion of 'use' in the definition does not only mean 'word for word' (exact copy) but also 'in substance' (a paraphrase). You can use (quote, paraphrase, summarize or otherwise refer to) someone else's work if – *and only if*– you acknowledge the source.

The practice of cutting (copying) and pasting electronically and using this text without citing it is regarded as plagiarism. Academics now have sophisticated software to identify where this has occurred.

The common knowledge exception

Common knowledge can be defined as knowledge shared by the writer and intended reader (Pecorari, 2013). In this case no citation is needed. The challenge here is to anticipate if your reader needs an attribution of the source or not.

If you are interested in more information on the concept of *common knowledge* and academic integrity go to.

Note: In many cultures it is not only allowed to directly use other people's words; it is even considered skilful, as for instance the sayings of Confucius and other respected scholars in China (Hamp-Lyons, 2006). In Arab culture, until recently the main mode of learning was through memorisation and imitation of the Koran. Ballard and Clanchy (1991) point out that these attitudes spread along a continuum from respecting knowledge to valuing its extension. Western cultures, on the other hand, encourage an analytical, questioning and evaluative stance to knowledge. Students are expected to dispute traditional wisdom in order to form their own points

of view.

Academic integrity

Students writing a project report or their Bachelor thesis at Lucerne University of Applied Sciences & Arts are requested to sign a declaration of academic honesty/integrity. This can be downloaded declaration of academic integrity.

Copyright©

> "Copyright is the exclusive legal right to reproduce, publish, and sell the matter and form of a literary and artistic work. (Here 'literary and artistic' is broadly defined and so includes scientific papers)" (Gastel & Day, 2017, p.117).

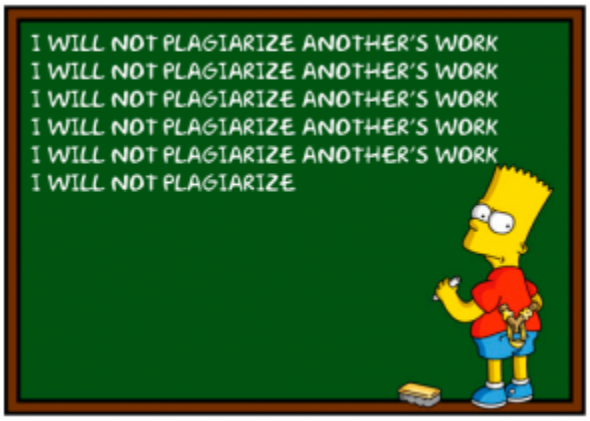
Therefore, never use or cite somebody else's intellectual property without permission or acknowledgement.

Fair-use doctrine

> "A limited amount of copyright material may be reproduced without infringing coyright laws under the so-called fair-use (or fair-dealing) doctrine, which permits criticism, comment, review or research of such material, provided that it is appropriately referenced" (Young, 2009, p.56).

So it would not be fair-use to quote verbatim 1 page of a 10 page article. If the original text, however, was a book of about 1000 pages, citing 1 page can be considered as fair-use.

For detailed information on what is considered as the **public domain** in Switzlerland and therefore is not protected by copyright and thus freely available go to.



source: https://preview.tinyurl.com/y9pyxvbu

31

How to refer to sources

General

How do you refer appropriately to the work of others? The convention in academic writing is that you must support your discussion of a topic by referring to the relevant literature. You do this in your text whenever you refer to a source (⇒ *in-text* citation). In addition, you need to list every source used in your text (and only these) in your ⇒ list of references at the end of your paper.

When reporting on previous research you have three choices, "to quote it (i.e. to repeat it verbatim and accurately), paraphrase or summarize it" (Pecorari, 2013, p.69). For details go to in-text reference quotations and and intext-reference: paraphrase and summarize.

Reference styles

There are several methods in use and which one you will be required to adopt depends on the conventions within your discipline. The preferred referencing method will be recommended by your supervisor. However, you must be able to recognise the alternative styles used in other sources

Author year system

The author-year system is used by many disciplines. One of these systems is the **APA** citation standard (American Psychological Association), which is the standard usually used at Lucerne University of Applied Sciences & Arts.

> in-text: Pecorari [1](2013[2]) states…
>
> list of references: Pecorari, D. (2013). Teaching to Avoid Plagiarism. How to promote good source use. Croydon: Open University Press.

[1] author's surname, [2] year of publication

Number system

A citation system used e.g. by the Institute of Electrical and Electronic Engineers (**IEEE**).

in-text: [5]

list of references: [5] D. Pecorari: Teaching to Avoid Plagiarism. How to promote good source use. Croydon: Open University Press, 2013.

Footnote- system

A system used by architects, for example, and consistent with the **DIN** (Deutsches Institut für Normung).

in-text: Pecorari states …… 1

footnote on the same page: [1]2013, p.14 (page number is required for direct quotes)

list of references: Pecorari, Diane: Teaching to Avoid Plagiarism. How to promote good source use. Croydon 2013.

Before submitting a text, you always need to enquire which citation standard is required, and then use it consistently.

Academic convention requires you to give this information in order to

- acknowledge the use of other people's work – you must demonstrate clearly where you have borrowed the text or ideas from others; even if you cite an author's work in order to disagree with it, you have made use of their intellectual property and you must show that you recognise that.
- help your readers understand what influenced your thinking.
- help your readers evaluate the extent of your reading.
- provide the reader with sufficient information to enable them to consult the source materials themselves, if they wish.

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In-text references

General

There are two ways how you can report on previous research: central, non-central of reporting (Swales, 2004).

- **Central reporting**: an author is directly reported as being responsible for a certain finding or argument such as 'Burke (1999) discovered that many students would like to become integrated into Australian society.'
- **Non-central reporting:** an author is reported as being responsible for a certain finding or argument but with their name given less focus by being placed in brackets at the end of the relevant statement, such as *'It has been shown that students have often performed successfully in their own education system before they seek entry into the particular university (Ballard, 1991).'*

 **Activity**: Discuss what you think might be the differences of these styles? When would you use which one?

As already mentioned you need to refer to sources you use to support your arguments so that your reader can exactly distinguish your own work from the work of others. This can be done by**directly** by quoting the exact words or **indirectly** by paraphrasing or summarizing a source.

Reporting verbs

Whether you refer directly or summarize previous research you will need to use adequate *reporting verbs*. To report correctly accurate comprehension is obviously essential. Another aspect, however, is a certain degree of interpretation: does the author through her/his choice of reporting verb argue, confirm or contradict other research? Paltridge and Starfield (2007) suggest a division of reporting verbs into:

- statement (e.g. report)
- judgement (e.g. explain)
- opinion (e.g. argue)
- suggestion (e.g. propose)
- disagreement (e.g. doubt)

So, the choice of a reporting verb is not just a matter of using different words but it *indicates* what the writer – *you* – thinks about the source.

The list below presents commonly used reporting verbs in alphabetical order. To choose the adequate one, is your decision as a writer.

add	contradict	highlight	present
acknowledge	declare	hypothesise	presume
affirm	demand	identify	propose
answer	demonstrate	imply	recommend
argue	describe	indicate	report
assert	discuss	investigate	reveal
assume	dispute	maintain	show
believe	examine	note	state
challenge	explain	observe	suggest
claim	find	outline	support
confirm	formulate	predict	warn

 Go to reporting-verbs-AEUK and then do the activity on their reporting-verbs-AEUK_worksheet to practice using the correct reporting verb in your own writing. Another activity find here

33

In-text references: quoting sources

General

Occasionally, you may want to quote the precise words of another author in your work.

- *Quote selectively*. There must be a good reason for using quotes as the emphasis should be on working with other people's ideas, not on reproducing their words. Your piece of work should be the synthesis of information from sources, expressed in your words.
- *Provide a context.* Work with your quotations. Not only provide the author but point out what is interesting or significant about them. Whenever possible try to embed them into your own sentences, using a particularly striking or relevant part of the original source
- If you use *short quotations*, you need the author's surname, year of publication, page number and quotation marks.

> As Pecorari points out the "strategy of stitching together elements from one text with elements from another", which is also called "patchwriting" is a very common case of plagiarism (2013, p.71).

- *Longer quotations* should be indented as a separate paragraph with no quotation marks.

  > Immature poets imitate; mature poets steal; bad poets deface what they take, and good poets make it something better, or at least something different. The good poet welds his theft into a whole of feeling which is unique, utterly different from that from which it is torn; the bad poet throws it into something which has no cohesion (Eliot, 1920 cited in Pecorari, 2103, p. 60).

- *Omitting words*: Use (…) to indicate where you omitted words. Your omission must not change the meaning, and the sentence remains grammatically correct.
- *Inserting words*: You might have to insert words to clarify meaning. Use square brackets […] around your inserted text.

As explained before, there are two principles of quoting somebody's work: central reporting, non-central reporting:

- According to Pecorari (2013, p.13) "quote"./According to Pecorari (2013) "quote" (p.71).

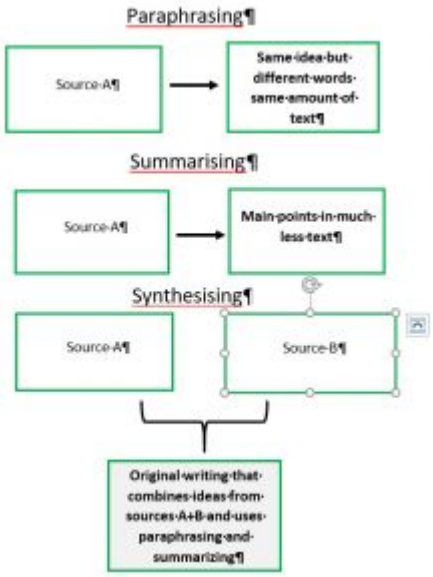
or

- “Quote” (Pecorari, 2013, p. 71).

34

In-text references: paraphrasing or summarising sources

General



In the English language-using academic world it is vital that your thinking is your own, and that it is represented in your own words supported by reference to the words of others. However, it is not always possible to use quotations, either because you may not be able to find an appropriate one or it may be too lengthy to integrate. At times like this you will need the skills of **paraphrase, summary** and **synthesis.**

Paraphrasing means changing the words of a text so that the product is significantly different from the original source, without changing the meaning. Effective paraphrasing is a key academic skill needed to avoid the risk of plagiarism. A **summary** is a short and selective version of another text's main ideas and is substantially shorter than the original providing a broad overview of the text. Summarising aims to reduce information to suitable length; paraphrasing attempts to restate relevant information. The following section focuses on acknowledging sources in a summary, which in principle also applies to paraphrasing somebody else's ideas.

Summarising and indirect citing

Once you have identified suitable material for your assignment or project, you need to make a number

of adjustments before you can incorporate it into your assignment. A summary, usually a shortened version of the text, is one such adjustment.

A summary should contain the chosen main points from the original text in a condensed manner. It should be written in your own words and you must acknowledge the source.

You need to thoroughly understand the source material you are working with. Some tips:

- Skim the text, noting the subheadings in your mind.
- Then read it again, highlighting important information or taking notes.
- In your own words, write down the main points of each section. Try to write a one-sentence summary of each section (one sentence might not be enough but is a useful strategy to focus on the key messages).
- Write down the key support points for the main topic.
- When you write the summary, make sure it reads smoothly. Use enough transition devices. You do not want a collection of sentences that do not flow.

 Identify the source in your summary!

APA style: Teaching students how to refer to sources correctly is much easier than teaching them how to summarise them adequately (Pecorari, 2013).

_____

DIN style: Teaching students how to refer to sources correctly is much easier than teaching them how to summarise them adequately.[1]

footnote, same page: [1] Pecorari, 2013

 In longer summaries, you may want to remind the reader that you are summarizing:

- *The author goes on to say that…*
- *The article further states …*
- *X (author's surname) /the author also states/ maintains/ argues/believes…*
- *XY (author's surname) / the author concludes …*

 Language focus:

Here are some more phrases that you can use to refer to someone's work that you are

summarising:

- *The work of X indicates/ reveals/ shows that …*
- *In an article by X, …*
- *A study by X shows …*
- *X has drawn attention to the fact that …*
- *X reports, notes, concludes, argues, discovered that …*
- *Research by X suggests that …*

VII

Creating non-text material

General

In many assignments it is essential to support your argument with non-text material. Some technical documents may be entirely non-text such as instructions for evacuating an airplane or the  sign.

Illustrations are an essential part of architectural documentations since architecture is to a large extent a visual entity and "consequently some form of illustrative material often plays an integral role in any discussion of it" (Borden & Rüedi Ray, 2006).

Careful choice and creation of visual material is as important as choosing the right words accompanying them. The most important considerations in choosing and using non-text material are **audience** and **purpose,** as your material should help to communicate something more clearly. Use visuals to emphasise and/or condense information or to clarify abstract concepts.

We basically distinguish between tables and figures: **figures** are pictorial representations (charts, diagrams, photographs, maps) and are referred to as ***figures*** (e.g. fig.1***)*** and are never labelled *Diagram 1* or *Graph 1.* A **table** is not a figure, and therefore not referred to as one.

The visual should be able to stand alone; it should contain everything the reader needs to interpret it correctly, including a title. However, visuals must be integrated into the text because their purpose is to drive the main argument.

Overall guidelines to consider when creating non-text material

- **Less is more**: Never include a visual in your report without a good reason: every figure should fulfil a purpose. So, ask yourself questions such as: What information does it show? Would it matter if I left it out? For example never construct a table or figure which could be explained in one sentence.

Type of visual:

- **Tables** are used to show exact numbers; they can illustrate contrasts between data points/samples or relationships between variables (e.g. income and voting preferences).
- **Figures** (or illustrations) some in various sizes and shapes. Photographs, drawings, flow charts, line graphs, bar graphs or pie charts are all referred to as figures in scientific texts. Figures, for example, illustrate certain trends of your data such as in a pie or bar chart.

- Types of figures **for architects:** A section, elevation or floor plan, an interior or exterior view, a sketch or photograph (which should also convey a certain atmosphere).

Design of visuals:

- Try to fit the visual on one page.
- Never crowd a visual into cramped space; use white space for balance.
- Place the visual where it will best serve the audience. The best place is either shortly before or after it is mentioned in the text.
- Tables: minimize *rules* (lines); ideally use horizontal lines only.
- Tables: organize like elements, or items you want to compare, so that they can be read *down*, not across.
- Explain *axes* (axes labels), units, symbols and abbreviations used on table or figure.
- *Footnotes* can be used to explain abbreviations or other details.They are placed immediately below. Use lower case letters (a,b,c, etc) or symbols (∗†§).

Integrationof visuals:

- Do not leave readers trying to visualize findings but refer to them as soon as they likely want to see them.
- Introduce the visual in the text just *before it appears on the page,* e.g. *Table 1 depicts…, Table 4 displays…*
- Summarize, explain, and/or interpret the visual just after it appears in the text. Highlight the most important elements (if you discuss every detail the table will be redundant). For more details on **data commentary** go to the Chapter on writing the **results section**.

 There are***two*** ways to refer to a visual:

'Figure 4 demonstrates that almost none of the consumers wanted more attention'. Or
'Almost none of the consumers wanted more attention (fig 4)'.
'As Table 1 shows, the total cost for …' Or *'Total cost for … (table 1)'.*
'The photograph in Figure 3 illustrates the impressive contrast between the materials'. Or
'The contrast between materials is impressive (fig 3)'

The first version is more verbose. The second is brief and directs attention to the findings, not the table.

If you are writing a lengthy work such as a Bachelor thesis you will need to provide lists of tables and figures, showing numbers, titles and page numbers after the contents page.

Labelling

- Figures and tables should be numbered (1,2,3 …) and given a **title** (also called *caption* or *legend*).
- **Titles** of figures and tables must be concise and informative. Unnecessary words are omitted. A meaningful title which reads like an interpretive comment draws the reader's attention to the most important aspects of the table/ figure.


Title/caption for a **table** is placed ***above*** table/ Title/caption for a **figure** is placed ***below*** the figure.

Citing sources in tables and figures

- Always acknowledge the source of a visual that you did not produce yourself. Copying visuals without referring to the source is plagiarism. This can be avoided by stating at the end of the caption: (source*:* Dietrichs, 2017, p.x).
- If visuals have been adapted, revised or redrawn, this should be indicated by writing after the caption: *based on Dietrichs (2017)* or *adapted from Phoolproof (2001, p.231)* or *redrawn after Noonan et al. (2004, Fig.3).* As copyright applies to the form of the chart or diagram and not the data itself, permission is not required from the copyright owner to use the reformatted figure. However, failure to reference the source is plagiarism. For more see Avoiding plagiarism.

For more details go to **citing non-text material** in **Guidelines on APA and DIN citation standard.**

Colour/ shading/ borders and rules (lines)

- Colours: consider physical and emotional effect of colours. Too bright colours might have a negative effect. Some people for example associate red with danger.
- Use colours, shading, borders and rules consistently (Palmquist, 2006, p. 221).
- There should be sufficient contrast between colours and shades.
- Do not use more than three colours on one page.


Watch these slides on how to prepare effective graphs and tables.


Find more information on how to create figures and tables here.

Language focus to refer tables and figures

As mentioned above engineers need visuals to discuss data. This data is frequently displayed in a table, graph, figure, or some other kind of nonverbal illustration. The illustrations themselves carry captions, which provide brief descriptions of their content. The discussion of the data is generally incorporated in the accompanying main text.

Typically, when you are referring to charts and diagrams you will draw the reader's or listener's attention to important features and describe them (table 9).

Table 9: Some useful language when referring to visuals

As can be seen It can be seen We can see	from/in	Table 1/ Figure 2
From Table 1, it From Figure 2, it	can be/ may be	seen/ concluded/ shown/ estimated/ inferred/ calculated
The graph/ Fig 1	shows	
If you want to comment on trends and developments shown in graphs, the following phrases may also be of use:		
There is a	significant/ slight/ steep/ dramatic	rise/increase/ fluctuation/ decline/ reduction/ drop
Sales/ Price/ Exports/ Temperature	increased/ grew/ rose/ declined/ dropped/ fell	slightly/ gradually/ steadily/ dramatically/ sharply/ suddenly

Word bank with trend:

- A trend *in* sth
- A trend *towards* sth

Adjective + trend: general, overall, broad/ recent, current/ long-term/similar/downward/increasing, upward/ linear/significant, clear, evident/ future/historical/ global, national/ demographic

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VIII

Guidelines on APA or DIN citation standard

This chapter presents:

1. The most common cases of the APA citation system when used as in-text reference
2. Examples of the most common cases of APA references in the list of references
3. Examples of the most common cases of footnotes and DIN citation standard in the list of references

1. The APA citation system in in-text references

The basis of APA citation system is the brief *in-text reference*. The emphasis is on the date a work was created. Readers find more information about the source in the bibliography. Find clear guidelines on the standard APA requires for in-text references if, for example, referring to a book written by one author.

Possible case	Standard	Example in-text citation
One work by one author	**Surname** is given plus year of publication Within the same paragraph, if you cite the same work you do not need to repeat the year of publication	Ridley (2012) pointed out.. The literature review is both process and product (Ridley, 2012)…
One work by multiple authors	**Two authors:** both surnames should be cited every time the reference occurs in the text. **Three to five authors**: all surnames should be cited the first time the reference occurs. In later citations only the surname of the first author followed by "et al." should be used, together with the year of publication if it is the first citation in a later paragraph. **Work by six or more authors:** when citing works with six or more authors, *always* use the first author's surname and et al.	Belcher, Johns and Paltridge (2011) found … Belcher et al. (2011) found …. (first citation in later paragraph) Belcher et al. found (citation in same paragraph)
Group as authors/ institutional author	When citing a corporation or agency as a source, simply list the year of the study in parentheses. If you do not mention agency in the text, write it out entirely, along with the year In subsequent citations you can abbreviate the name	The Environmental Protection Agency (2007) issued an alarming report on global warming. A study (The Environmental Protection Agency, 2007) predicted…. Continued ozone depletion may result in widespread skin cancer (EPA, 2007).
Two or more works within the same parentheses.	These should be ordered in the same way as they appear in the bibliography. If the same author published works in the same year, these are distinguished by the suffixes a, b, c and so on after the year. If works by different authors are cited within the same parentheses these are separated by semicolons.	Recent research (Belcher 2010, 2011) shows … Past analyses (Houston, 1997a, 1997b) showed … Past analyses (Houston, 1997; Belcher, 2010) showed…
Citing a source found in another source	If you you discover a quotation or idea mentioned in another author's book/ article try to find the original source. Otherwise indicate that you use an indirect source, using the phrase *as cited in*. In your Reference list you only list the source you used. You do not need to include the indirect source.	"I dream of space full of wonder. […] When I place the first line on paper to capture the dream, the dream becomes less" (Kahn, 1944 as cited in Frampton, 1995, p.212) or De Groot's study on chess expertise (as cited in Kirschner, Sweller, & Clark, 2006) is…
Works with no author	Cite the first few words or the whole title and the year of publication. Place articles or chapter titles in quotation marks. If it is a book or report then it should be *italicised*.	In an article on energy standards ("PPR in Practice," 2008) … In a report on electrical cars (*Report of the Turkish Commission on Electrical Cars*, 2009) …
Specific parts of a source	When a specific idea is taken from a source, paraphrased or quoted, the page should be indicated. *Page* and *chapter* are abbreviated in text citations (page = p.; pages= pp., chapter = cha.)	(Belcher, 2010, p.204)
Citing personal communications	These include interviews as well as letters, emails. These are not included in the reference list because they are not recoverable data; they should be cited in the text only. The surname and initials of the person(s), together with as exact a date as possible are given. Reference should be made in the text to their inclusion in any relevant appendix	M. Hofstetter (interview/personal communication, October 20, 2012) agrees…(see Appendix A for details)
Citing non-text material	Writers who photocopy and use visuals – a chart, a table, a diagram, or another form of non-text material – must cite the source of that material immediately following the caption of the visual *or* in the list of tables and figures.	Figure 1: Development of house prices in the Canary Islands. In Krollo, 2009, p. 45. (full details appear in list of tables and figures)

Possible case	Standard	Example in-text citation
Citing a website	When referring to an entire website, cite the address parenthetically in your text. Do not include a citation for an entire web site in your Reference list.	The Centers for Disease Control (http://www.cdc.gov) is a reliable source for….
Citing FROM a website	When you are citing a particular document or piece of information from a website, include both a reference list entry and an in-text citation. For intext citations you include author and date as with any other APA Style citation. Where no author is indicated, cite the first few words of the title and the year of publication. If there is no date, include the abbreviation *n.d.*	Lopez (n.d.) points out….
Cite magazine or newspaper articles	surname and date (*or* n.d.)	(O'Hehir, 2008) or According to O'Hehir (2008)
Citing a wiki	Use title or the first few words from the title	("How to use Audacity", n.d.)
Citing TED talk or youtube	For online material/ presentations use again the author, date principle. Depending on the video channel you might have a different author, see example	Palmer (2013) or (Palmer, 2013) or TED (2013) Important then is that you correctly list the details in the reference list **either:** Palmer, A. (2013, February). *Amanda Palmer: The art of asking* [Video file]. Retrieved from https://www.ted.com/talks/amanda_palmer_the_art_of_asking or: TED. (2013, March 1). *Amanda Palmer: The art of asking* [Video file]. Retrieved from https://www.youtube.com/watch?v=xMj_P_6H69g

2. List of references (according to APA citation standard)

Let us see what you already know.

Activity

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The order of entries in the bibliography should be arranged in *alphabetical* order of the first author. If there is no author, the title moves to author position, and the entry is alphabetised by the first significant word in the title. Go to the bibliography of this book to see an example.

 Please note:

- If no date of publication is available, write (n.d.)
- If there is no author, start with the title. Letter of the first 'real' word indicates the position in the bibliography.
- In the title of a non- periodical, or of an article or chapter, capitalise only the first word in the title as well as nouns that need capital letters such as names.
- **Book title, article title** or **journal article title**. Use a period at the end of each title.
- **Book titles** are *italicized*. Only the first word of titles and subtitles are capitalized; all other words are lowercase.
- **Article titles** are given no italics or quotation marks.
- **Periodical titles, journal titles, newspaper titles** are italicized like book titles

Examples how to list your various sources

A book/ non-periodical:

Helfers, C. & Schmitten, V. (2008). *An introduction to Game Theory.* Chicago: Bilten.

Surname, initial & surname, initial. (year). *Title of work*. Location: Publisher.

A journal/ periodical (online):

Richards, B.A. (2001). Market value of electrical cars in Sweden. *Electrical Car Journal*, 14, 28-56.

Surname, initial.initial. (year). Title of article. *Title of periodical*, xx(volume no.) (x) (issue number), xxx-xxxx (page numbers). (Retrieved from URL)

An edited book:

Hampert, K. & Johns, M. (Eds.) (1985). *Chaos Management: A survey*. London: Smith&Smith.

Surname, initial & surname, initial. (Eds.). (year). *Title of work*. Location: Publisher.

Part of a non-periodical (e.g. book chapter)

Johns, A.M. & Makalela, L. (2011). Needs Analysis, Critical Ethnography, and Context: Perspectives from the Client – and the Consultant. In D. Belcher, A.M. Johns & B. Paltridge (Eds.), *New Directions in English for Specific Purposes Research*, (pp. 197-221). Michigan: University of Michigan Press.

Surname, initial & surname, initial. (year). Title of chapter. In initial. surname, initial. surname & initial. surname (Eds.), *Title of book* (pp. xxx-yyy). Location: Publisher.

Encyclopaedia or dictionary

Lea, D. (Ed.) (1950). *Oxford Learner's Dictionary of Academic English.* Oxford: Oxford University Press.

Surname, initial. (year). *Title of work*. (xth ed., Vols.x-x). Location: Publisher.

A (online) newspaper or magazine article:

Burraco, A. B. (2017, Feb 02). How the Language We Speak Affects the Way We Think. Linguistics and neuroscience find better answers to old questions. *Psychology Today*. Retrieved from psychologytoday.com

Surname, initial.(year, month day). Title of article. *Title of Magazine*, xx, xxx-xxx or Retrieved from URL

A (online) newspaper or magazine article with no author:

How to bring cities back from the brink. (2017, May 4). *The Economist*. Retrieved from economist.com

Title of article. (year, month day). *Title of Newspaper*, pp. xx-xx. or Retrieved from URL

A (government) report (online)

Swiss Federal Office of Energy SFOE (2018). *Energy Strategy 2050 once the new energy act is in force. Retrieved from http://www.bfe.admin.ch/energiestrategie2050/index.html?lang=en&dossier_id=07008*

Name of institution. (year). *Title of report* (details of series). Retrieved from URL

Online stand-alone document (with no author identified)

Title of document. (year) Retrieved from URL or database

Online video file

Palmer, A. (2013, February). *Amanda Palmer: The art of asking* [Video file]. Retrieved from https://www.ted.com/talks/amanda_palmer_the_art_of_asking

Speaker's surname, initials (date). *Title of talk* [Video file]. Retrieved from http://www.ted.com.rest_of_URL

or

the author who posted (such as TED or Youtube) take author position

TED. (2013, March 1). *Amanda Palmer: The art of asking* [Video file]. Retrieved from https://www.youtube.com/watch?v=xMj_P_6H69g

Please note:

- If no date of publication is available, write **(n.d.)**
- If there is no author, start with the title. Letter of the first 'real' word indicates the position in the bibliography.
- In the title of a non- periodical, or of an article or chapter, capitalise only the first word in the title as well as nouns that need capital letters such as names.
- For long URLs you can shorten them by going to

Activity

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3. Foot notes or DIN citation standard

A standard often used by architects is a German standard: DIN (Deutsches Institut für Normung). *In-text citations* are based on **footnotes** with **superscript markers** [1]. This system acknowledges the

author, year of publication and page number (if necessary) on the same page without interrupting the flow of the text.

Examples for in-text ciations

Direct citations

"Architecture is textual as well as visual and spatial." [1]

Footnote on the same page: [1] Borden and Rüedi Ray, 2006, p.1

When referring to the same source as in the previous footnote use:

[1]ibid. *(ibidem = same place).*

Indicate if information is from a different page:

[2] ibid., p.5

The same principle is applied when paraphrasing or summarising information from previous research just without quotation marks. More examples for direct and indirect quotations are provided in Chapter on in-text citations.

 Footnotes are usually placed at the end of a sentence (not directly after the phrase to which they relate).

Bibliography/ list of references (DIN standard)

Order: List the entries in alphabetical order.

Examples of how to list various sources

A book with **one** author:

Bailey, Stephen: Academic Writing. A Handbook for International Students. London 2011.

Surname, first name: Title. Subtitle. Place of publication Year of publication.

If there is *more than one* author:

Borden, Iain/ Rüedi Ray, Katerina: The Dissertation. An Architecture Student's Handbook. Oxford

2006.

Surname, first name/ surname, first name/ surname, first name: Title. Subtitle. Place of publication Year of publication.

No author:

An Illustrated Dictionary of Technical Terms. Bielefeld 1993.

Title. Subtitle. Place of publication Year of publication.

If the book was edited:

Hyland, Ken/Shaw, Philip (Eds.): The Routledge Handbook of English for Academic Purposes. Milton Park 2016.

Surname, first name (Ed.): Title. Subtitle. Place of publication Year of publication.

Essay in exhibition catalogue

Kretzschmar, Ulrike: Urban Theater. I.M. Pei's Exhibition Building. In: The Exhibition Building of the German Historical Museum Berlin/2003, pp.21-33.

Surname, first name: Title. Subtitle. In: title of catalogue/Year of publication, pp. x-xx.

Contribution to journal/ magazine

Casakin, Hernan Pablo (2007). Factors of metaphors in design problem-solving: Implications for design creativity. In: International Journal of Design/2007, pp. 21-33.

Surname, first name: Title. In: title of publication/ Year of publication. pp. x-xx.

online source: add URL and access date

Ayiran, Nezih: The role of metaphors in the formation of architectural identity. In: A/Z ITU Journal of the architectural faculty/2012, pp.1-21. https://www.journalagent.com/itujfa/pdfs/ITUJFA_9_2_1_21.pdf (Accessed 29 July 2018)

Missing information:

- Use n.d. (no date) if no year of publication is provided.
- If the place of publication is missing add 'unknown place of publication'

Bibliography

Bibliography

Bailey, S. (2011). *Academic writing: A handbook for international students*. London: Routledge.

Ballard, B., & Clanchy, J. (1991). Assessment by misconception: cultural influences and intellectual traditions. In L. Hamp-Lyons (ed.), *Assessing second language writing in academic contexts*. Norwood, NJ: Ablex.

Ballenger, B. (2009). *The curious researcher: A guide to writing research papers*. Boston: Pearson.

Borden, I. & Rüedi Ray, K. (2006) *The dissertation. An architecture student's handbook.* Oxford: Architectural Press.

Breach, M. (2009). *Dissertation Writing for engineers and scientists*. Harlow: Pearson Education Limited.

Gastel, B. & Day, R.A. (2017). *How to write and publish a scientific paper* (8th edition). Cambridge: Cambridge University Press.

Glasman-Deal, H. (2010). *Science research writing*. For non-native speakers of English. London: Imperial College Press.

Gillett, A., Hammond, A. & Martala, M. (2009). *Successful academic writing.* Harlow: Pearson Education Limited.

Hamp-Lyons, L. & Heasley, B. (2006). *Study writing: A course in writing skills for academic purposes.* Cambridge: Cambridge University Press.

Lucerne University of Applied Sciences and Arts (2010). *Plagiate werden geahndet: Merkblatt für Studierende und Mitarbeitende der Hochschule Luzern.* Retrieved from http://www.hslu.ch/merkblatt_plagiat.pdf

McMillan, K. & Weyers, J. (2008). *How to write dissertations & project reports*. Harlow: Pearson Education Limited.

Mostafa, J. (2005). Seeking better web searches. *Scientific American*, 292 (2), 67–73. Retrieved from http://dx.doi.org/10.1038/scientificamerican0205-66

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