Tomas Bata University in Zlín
Faculty of Humanities

Guide to Writing Master Thesis in English

Created by Anežka Lengálová

The purpose of this Guide is to provide help to the students of the final year of Master's studies who are working on their theses. It should make them think of the many aspects of academic writing applied to this very specific aim - from the selection of the topic, through literature review and experimental setup, to the thesis defence. Thus the guide is supposed to aid the students in finishing the graduate degree easier, and moreover, to get the skills necessary to produce English text of this type, which is necessary in today's world for academic communication.

The CD is supposed to be used by the students attending the course offered by the Department of English and American Studies of the Faculty of Humanities, Tomas Bata University in Zlín, as well as to serve the students who, for different reasons, cannot participate in lessons during the semester. It contains the experience of the author together with other peoples' experience in the area published both in the traditional way and on the web. Integral parts are also links to the sources with exercises for practicing different aspects of thesis writing, mainly from the point of view of English as a second language and style, and also links to University's or Faculties' regulations. Thus it will concentrate on the process of writing, not research itself; the purpose in no case is to give the methodology of the research; it is the goal of other courses at the University.

The Guide does not have an ambition to be a solely consultant in your work on Master Thesis (MT). The most valuable source of information and help is still your supervisor, who definitely has rich experience in leading theses. Do not hesitate to contact him/her continuously during the process of even preparation for writing, and even more during writing, to ensure that you will not do useless work.

When working on your thesis, you should be prepared to:

- spend hours reading books and journals relating to your topic and take notes, some of which you will never use;
- discuss your research with your supervisor and your peers, change points of view and opinions;
- rewrite your draft several times, discard and recycle half of the materials you will produce;
- have your work criticized;
- feel confused and depressed now and then;
- make mistakes and **learn from them** (probably the most important contribution!).

The project was sponsored by Higher Education Development Fund, Ministry of Education of the Czech Republic
Tento materiál vznikl za podpory Fondu rozvoje vysokých škol MŠMT ČR

FOND ROZVOJE VYSOKÝCH ŠKOL

What you can expect when using this Guide:

- producing a thesis on a good level of language and style;
- obtaining the valuable experience with less stress and frustration.

The Guide has been tailored to the needs of students of technical faculties (Faculty of Technology, Faculty of Applied Informatics) at Tomas Bata University in Zlín. It should help them in the process of MT elaboration from the very beginning to the successful thesis defence. From this point of view it considerers the valid rules at the University.

The purpose of writing the Guide was to give the students chance to be supported during the whole process of writing. So far they have a chance to attend Master Thesis seminar in English, which, however, finishes with the winter term and the students are “left alone”. This CD should lead them (it means YOU) not only through writing the theoretical part, but also help when they work on the analytical part and the rest of the thesis.

The CD is interactive and contains two types of materials: Background information and Examples/exercises/practice, as suitable for each item. Here you will apply the theoretical knowledge in practice, which will give you self-confidence in writing on your topic.

The selection of an appropriate document is very simple - similar to the work with the Internet. Clicking on the selected item you will unpack the two choices, and clicking on the chosen one you will open it.

You will also find links to Internet sources; logically, these only work if you are connected to the Internet. It may happen during the time that the webpage has been moved, so you will not be able to open the suggested page. However, I hope this will only be exceptional.

As you can see on the left, the Guide is divided into 20 items, starting with **Steps in MT writing** and **Scheduling the work.** Here you will plan the work and completion of individual partial tasks. You will have to observe these deadlines so that you can safely arrive to **MT presentation** and become a successful graduate from Tomas Bata University in Zlín.
Good luck!

The project was sponsored by Higher Education Development Fund, Ministry of Education of the Czech Republic
Tento materiál vznikl za podpory Fondu rozvoje vysokých škol MŠMT ČR

FOND ROZVOJE VYSOKÝCH ŠKOL

Table of Contents

1. Steps in MT writing

At the very beginning you should know what is before you. Even if you have some experience with your Bachelor Thesis, try to look at the task more systematically.

There are several steps in your way to your Master degree. If you want to get to the top of the way, you cannot slip on any of these steps, otherwise you will fall down. Hopefully, you will have a lifebuoy like in this picture ☺.

Let us see the steps before you:

Step 1 - Selection of the topic

Deciding of the topic for your MT is a key factor on your way to its successful completion.

The topic should be selected to comply the following criteria:

- To get some satisfaction, you must choose the topic of your interest, which must remain for a longer time.
- It must be original, something not researched yet (new material, novel method or approach), able to bring some new knowledge.
- The scope must be appropriate to be managed in the time given for MT.
- You must be sure that technical equipment and finances are available at the University (or a partner institution).
- The "difficulty" of the topic must be in accordance with your knowledge.
- It must be attractive for the committee (this can be supported by justification of the research, i.e. "creating a research space", as discussed later in CARS).
- It should be general enough to enable elaboration of a precise title in the process of research.

Of course, at this stage you also select the supervisor. At TBU it is a rule that supervisors offer the topics, so choosing a topic you also choose the supervisor. However, you still have a chance to come with your topic and ask a person working in the area if he/she would supervise your thesis; then the decision is yours.

Step 2 - Preparation of the project

At the beginning it is good to think over the process of MT elaboration from both theoretical and practical aspects. It can save much time and effort in later stages.

Thus you should

- develop working bibliography, i.e. literature published on the topic; this will give you theoretical background and support the importance of your topic,
- write the purpose statement (why you are going to do the research),
- state the research question [1],
- specify the methodology you will use (it is advisable to carry out a pilot study to make sure that the methodology works).

Having a project enables you to discuss concrete aspects of the topic with your supervisor from the very beginning of the time given. Thus you will obtain advice early and avoid work in vain. It will also speed up the process of writing, as you will have something to build on (even if you will slightly change it during the process).

Step 3 - Carrying out the research

When you are sure the methodology will bring acceptable results (pilot study), you can start serious research. After consultations with your supervisor you must be sure about the material(s), instruments and methods you will be using (including conditions, e. g. temperatures, pressures, pH, times for individual operations), number of samples to test, models, form of data and its processing (statistical treatment) and others. Of course, you will modify individual items during the research according to partial results you will obtain.

Step 4 - Writing the thesis

Simultaneously with the research, or even before, you should start writing Theoretical part of the thesis. It requires a lot of reading, i.e. a lot of time, and a high level of academic writing. This itself is quite a demanding task, and in your case it is even more complicated as you will be writing in English, a foreign language.

Bear in mind that your thesis must be acceptable both from the content and language/style points of view. You will discuss the content with your supervisor, while the background for the right style and language should be provided by this Guide.

From the very beginning you should have a correct approach to writing. You must consider the following factors: audience (for whom you are writing), purpose (why you are writing); these influence the organization of the text and style (for MT very formal); then you must ensure good text flow (join individual ideas into one whole) and presentation (how neat and readable the text looks).

Step 5 - Preparing oral presentation/defence of MT

When all your research is ready, thesis written and submitted, your final task will be to prepare for the defence of MT. By the University rules (http://web.utb.cz/en/docs/Rules_study_Examination.pdf - Article 27, Para 4) it is possible to defend the thesis in English.

In the final items of this Guide you will find some stylistic and language help for the presentation preparation and delivery.

Planning carefully all the project of MT, you will surely get to the top of the highest step and shout out “heureka!”

Reference

[1] ROBERTS, C. M. *The Dissertation Journey*. Thousand Oaks : Corwin Press, 2004.

Thus you should

- develop working bibliography, i.e. literature published on the topic; this will give you theoretical background and support the importance of your topic,
- write the purpose statement (why you are going to do the research),
- state the research question [1],
- specify the methodology you will use (it is advisable to carry out a pilot study to make sure that the methodology works).

Having a project enables you to discuss concrete aspects of the topic with your supervisor from the very beginning of the time given. Thus you will obtain advice early and avoid work in vain. It will also speed up the process of writing, as you will have something to build on (even if you will slightly change it during the process).

Step 3 - Carrying out the research

When you are sure the methodology will bring acceptable results (pilot study), you can start serious research. After consultations with your supervisor you must be sure about the material(s), instruments and methods you will be using (including conditions, e. g. temperatures, pressures, pH, times for individual operations), number of samples to test, models, form of data and its processing (statistical treatment) and others. Of course, you will modify individual items during the research according to partial results you will obtain.

Step 4 - Writing the thesis

Simultaneously with the research, or even before, you should start writing Theoretical part of the thesis. It requires a lot of reading, i.e. a lot of time, and a high level of academic writing. This itself is quite a demanding task, and in your case it is even more complicated as you will be writing in English, a foreign language.

Bear in mind that your thesis must be acceptable both from the content and language/style points of view. You will discuss the content with your supervisor, while the background for the right style and language should be provided by this Guide.

From the very beginning you should have a correct approach to writing. You must consider the following factors: audience (for whom you are writing), purpose (why you are writing); these influence the organization of the text and style (for MT very formal); then you must ensure good text flow (join individual ideas into one whole) and presentation (how neat and readable the text looks).

Step 5 - Preparing oral presentation/defence of MT

When all your research is ready, thesis written and submitted, your final task will be to prepare for the defence of MT. By the University rules (http://web.utb.cz/en/docs/Rules_study_Examination.pdf - Article 27, Para 4) it is possible to defend the thesis in English.

In the final items of this Guide you will find some stylistic and language help for the presentation preparation and delivery.

Planning carefully all the project of MT, you will surely get to the top of the highest step and shout out “heureka!”

completion. [3] At present you can find free-download software on the web (e.g. [4]), where you can prepare the timeline in a sophisticated way. But keep in mind that these are only trial versions for a very limited time so be sure that it does not disappear with all your elaborated plans!

If you are not so friendly with computer programs, you can prepare, in cooperation with your supervisor, a simpler a map of partial tasks and interim deadlines. An example can be found here. Every week, preferably at the same time, you should see whether you have fulfilled the planned tasks and specify the work for the next week.

b) **Daily schedules** are plans for individual days in the week. The time of your MT elaboration can be divided into two periods: the time when you have regular lessons at school and the remaining time before you submit MT, i.e. when you can be fully devoted to the work on it. In both cases it means to organize your time effectively. One possible help is to draw a typical week's timetable on a large sheet of paper. You can find a sample timetable for the time with other school duties here and adapt to your needs.

In the last period of your work on MT, when you do not have any lessons and only work on your thesis, you must increase the intensity of work. You will replace your school duties (lectures, seminars) by hours devoted to MT. If you want to succeed, you must be strict to yourself, permanently involved in your research and writing. Reserve several hours of interrupted time to work on the project every day (and stick to the schedule!) so that you stay "emerged" in the problem. Only then you will be able to see some progress and stay motivated.

c) The third type of planning is **to-do list**; this is recommended to be checked and completed every day. Even if you think you will remember your tasks, it is much better to put them down and cross when completed. It will give you a good feeling that things are moving. You can divide the list by priorities: i) necessary, ii) important, iii) good to do. If you have a lot do, do not waste time with iii) category, even if it is tempting (maybe easiest to do). [2]

An important thing also is to have the plans handy whenever you need to check (your diary, printed or electronic, mobile phone or so).

Organizing your time means to use it effectively. As you surely know, there are some parts of the day when you are more efficient and others when your brain does not work very well. So you should know your biorhythm and use it for the benefit of your thesis. Use the time segment when your brain is most productive for mental work (writing), less productive periods for manual work (experiments, work in laboratory). Thus you will be able to do more work in a shorter time. Working effectively definitely does not mean working long hours without breaks. After certain time periods, plan some breaks when you take a rest or do something for pleasure. This will give you energy and higher productivity in further activities.

Focused work on a long-term task also requires some **personal quality** and strong will, i.e. the psychological viewpoint must be taken into account. You surely know that sometimes it is difficult to make yourself work on MT if there are so many temptations (your friend, parties, chances to do some paid work). However, you should not be distracted be these. Don't be afraid to say NO! Use every trick or even bribes to persuade yourself to stay committed to your primary task. When you finish an important sub-task, spoil yourself with something nice (chocolate or other food you like, favourite film or music, new piece of clothing). This will keep you motivated.

When you have planned your personal **study periods**, you should also think of the **place to study** and write literature review. Is it the University library, a study or computer room or your home? For experimental work, however, you will not probably be able to choose the laboratory where you would measure (there is usually only one possibility).

References

[1] VIHALEM, A., *A General Guide to Writing and Defending Papers.* majandus.ttu.ee/13191

[2] ROBERTS, C. M. *The Dissertation Journey*. Thousand Oaks, California : Corwin Press, 2004.

[3] http://en.wikipedia.org/wiki/Gantt_chart

[4] http://www.smartdraw.com/specials/ppc/project-charts.htm

2. Scheduling the work

a) Look at this example of an **action plan**, and devise one for yourself, i.e. suitable for your own context, subject discipline and time available. [1] Beside the work on MT itself you must also take into account the administrative procedure (the deadlines for which, however, differ at faculties).

Week	Main task to be completed	Other tasks	Interim deadlines
1	Background reading	Contacting supervisor	
2	Finalizing topic	More background reading	Agreement on topic
3	Literature search - what has been done so far?	Searching methodological issues, suitable methods for analytical part	Working annotated bibliography finished (30 sources)
4	Draft of plan based on literature review	Methodology reflected in plan	Formulation of thesis statement
5	Modification/specification of plan	Research started, work on literature review	Overview of research design
6	Pilot research	Analysis of pilot data	Approval of methodology
7	Work on analytical part/experiments	Work on literature review	Details for MT assignment into STAG
8	Work on analytical part/experiments	Work on literature review	
9	Work on analytical part/experiments	Analysis of data started	Interim report to supervisor
10	Work on analytical part/experiments	Data analysis	
11	Work on analytical part/experiments	Data analysis and evaluations	Interim report to supervisor
12	Work on MT draft		
13	Work on MT draft continued		
14	Work on MT draft continued		
15	Complete draft	Rules of academic writing applied to draft	Official assignment for MT obtained
16	Self-evaluation checklist applied to draft	Style improved and refined, readable presentation of research	Draft approved by supervisor
17	Proofreading, finalizing text		Final version approved by supervisor
18	Printing, binding MT		Deadline for completing study duties, MT submission
19	Studying for final exam		
20	Studying for final exam		Reading supervisor's and referee's comments on MT
21	Final exam, MT defence		**Celebration!!!**

Count the weeks carefully, check in your Faculty's schedules deadlines for completing your studies and MT submission.

b) You can make a **weekly timetable** in the following form. It is partly filled in, but you can change the items as you wish [2]:

Approx. times	Mon	Tue	Wed	Thu	Fri	Sat	Sun
6.00-8.00 am	Sleep	Sleep	7.00-8.00 Swimming	Sleep	7.00-9.00 Seminar	Sleep	Sleep
8.00-10.00 am	9.00-10.00 Lecture	8.00-9.00 Seminar		9.00-10.00 Lecture	8.00-10.00 Seminar	Paid work	Catching up with sleep
10.00-12.00		11-12.00 Lecture	10-11.00 Seminar		11.00 -12.00 Lecture	Paid work	Catching up with sleep
12.00-2.00 pm	12-1.00 Seminar			Consultation with supervisor		Paid work	Seeing friends
2.00-4.00 pm	Basketball			2.00-3.00 Seminar		Paid work	Seeing friends
4.00-6.00 pm		5.00-6.00 Seminar			Spinning		Seeing friends
6.00-8.00 pm			Paid work				Seeing friends
8.00-10.00 pm		Regular evening out	Paid work		Regular evening out	Regular evening out	
10.00-12.00 pm			Sleep		Regular evening out	Regular evening out	

Note: To make your schedule even more instructive you can use colours to distinguish individual activities, or at least to highlight the time for MT, as it must be your priority.

When you put down your regular activities, you will see immediately how much time you can spend on your MT. You can use the free time and/or reduce the "non-productive" time. This is also a chance to order your preferences, to balance your professional, social and relaxation times.

Filling the plan, first start with your duties that cannot be changed, then put down an appropriate amount of activities that can only be done at certain times, after it the duties that can be done any time of the week and finally the activities for pleasure applicable as you wish. You should know something about yourself, such as when you are at your best for studying (early morning, after lunch, late night). Some questions you should ask are:

- What is the best time for your mental activities (studying, writing)?
- When can you do physical activities (measurement in the laboratory)?
- Does physical exercise help you concentrate?
- How long are you able to fully concentrate?
- What is the best relax for you?
- …..

Be realistic – do not try to bite more than you can chew, do not expect impossible aims. If you change your present weekly schedule completely because of MT, you may get into a trap (completely changed organization of the day) and your results will be poor.

Preparing a schedule is important but following the deadline is vital. Check your schedule regularly and if you find out that the first version is not ideal, do not hesitate to change it. On the other hand, do not change it every week, you would loose the valuable regularity.

Digression: However, bear in mind that work is more important than the plan. One extreme in overestimating planning is described in Red Dwarf [3]. Rimmer is working so hard on the revision timetable for an exam in astronavigation and changes it so frequently that he does not have any time to really study.

References

[1] ROBERTS, C. M. *The Dissertation Journey*. Thousand Oaks : Corwin Press, 2004.
[2] http://www.studyskills.soton.ac.uk/develop.htm
[3] NYLOR, G. *Red Dwarf Omnibus.* Penguin Books. p. 63-64. 1992.

3. MT purpose, topic selection

Before you start thinking about the topic of your MT, you should be sure what MT is and how it differs from Bachelor's Thesis you elaborated two years ago.
It is important to know that different areas may emphasise different features, so in this Guide we will mostly concentrate on general features, such as text clearly divided into paragraphs, or clear connection of the ideas to the topic, i.e. relevant information.

Criteria for Choosing a Topic

If you want to manage the topic successfully (which should be your aim!), you should choose a topic which

- you are **familiar** with, also from the viewpoint of other research related to the topic;
- you are sure you have the **ability** to get through all the process from both theoretical and practical point of view;
- you clearly **understand** from the research procedure aspect, i.e. you know how to carry out the research;
- you are **motivated** to go through all the process.

In more detail it means:

- First, take into consideration your professional interests and your nature. Some people are more attracted by theoretical problems, others prefer practical experience, still others prefer combination. If you like work in laboratory, choose the topic based on experimental part with a specific object of research, if, on the other hand, you tend to find relations among various factors on a theoretical level, you should decide for a more theoretical area, where you will explain, compare and further develop theoretical aspects. Do not try to cheat yourself by taking the "easiest" topic, it may later appear opposite, and moreover, you will not get any pleasure from the work.
- See who are the advisors for individual topics offered by the department or who could potentially supervise your own topic. Naturally, also teachers are personalities of different qualities and characters; some are very busy and hardly ever have time to discuss your work, so you could get delayed or just work on your own, others leave the decisions on the students, still others give the student all details, so he/she cannot apply their creativity. The advisor should also be compatible, you must feel comfortable cooperating with him/her, otherwise the time of your work on MT will be full of stresses. Consider the choices, but decide very early, otherwise your chosen advisor will not be "free" before you come to him/her. The deadline for the publication of topics differs, depending on the faculty (FAI - http://web.fai.utb.cz/en/docs/Smernice_07_08_eng.pdf, FT - given in the schedule of the relevant academic year).
- An important aspect of your selection is the literature on the topic published and available. You are still not on the level where you could create a new research area, you can only contribute to what has been done. The first step may be browsing MTs on similar topics. Are the results acceptable, i.e. can you suppose that your research will bring some new findings? Or has all the previous research in the area come to a dead end? In this case it would be quite risky to select the topic.
- Topicality and novelty are quite important aspects. Your MT should bring new ideas to the present state of the art, even if the contribution is only limited, not breaking.
- In an ideal case your MT should be useful in subsequent works, either in practice or theoretical research.

- The topic should be clearly defined, including the scope, which must be manageable in the time given for MT.

Setting the Limits on Your Research

You must specify, after consultations with your supervisor, the limits of your study in a clear way: what is and what is not to be studied.
The following example will give you a gist how to move from the idea for a topic (broad) to a topic itself (narrower). In your case, however, you will need to use a suitable strategy, which may differ from that suggested here.

The **preliminary** topic**:** *The effect of various factors on the viscosity.*
This is a very broad area which can be described in a number of monographs, research papers and other scientific texts. You need to determine appropriate limits in order to make the topic manageable within the time and conditions you have. This broad topic needs to be formulated more precisely from the point of view of purpose and scope.
You might precise the above given topic in:

- a concrete factor (temperature, pressure),
- the type of material (polymer - polyethylene, polypropylene, ABS, …filler – nanofiller, carbon black,...),
- the technology for which the results will be used (extrusion, injection moulding, casting, …).

If the area is still too large, you can further specify the conditions giving

- other aspects of material (level of branching, length of side chains, regularity of structure),
- brand of material (mainly for the research to be applied directly in a company),
- range of conditions (temperatures or pressures) in which the specified material will be measured.

Thus you can come to the **final** topic you will research, e.g.

The effect of pressure on the viscosity of isotactic polypropylene

or

The effect of temperature on the viscosity of LLDPE in extrusion.

Aim of Master Thesis

Quoting the Study and Examination Rules of TBU ”A Master’s or Bachelor’s thesis proves that a student is able to solve and present a given problem in oral and written forms and is able to defend his/her own approach. A Master’s thesis differs from a Bachelor’s thesis as regards the character of given problems, extent and depth. Writing a Master’s or Bachelor’s thesis is part of the curriculum. “[1]

More generally, MT is a link between education on the one hand and working life on the other hand. It can be defined as a research paper written personally and independently under the guidance of a supervisor, in which the author in a comprehensive manner discusses and works out a topical theoretical or practical engineering problem. [2]

MT is not designed to reproduce information available elsewhere, on the contrary, it should be a proof of your ability to analyse and synthesize, with the aim to contribute to the

knowledge in the area with new findings. In MT the student should demonstrate his/her ability to identify, analyse and solve a scientific or technical problem, evaluate the solution, and present the results in a comprehensive form. In the project the student should show that he/she has the theoretical knowledge and is able to apply the methods of science and engineering. In other words, the goal of MT is to train students to employ academic working methods in an independent way.
MT follows the basic principles of academic writing, but from the formal point of view it also has some specifics, some of which are quite strictly given by the University or Faculty rules: http://web.utb.cz/cs/docs/smernice_r12_2009.pdf, or if changed, it will be published at http://web.utb.cz/?id=0_0_12_3&lang=cs&type=0 (unfortunately, only in Czech).
The length of MT is usually given by the Department where your study programme is realized, or by your supervisor. The lengths may differ substantially depending on the research area.

You should realize the difference between Bachelor Thesis (BT) and MT. While the former's aim is to consolidate the skills obtained through this level of studies (formulating the problem, setting the target, finding methods, collecting and processing information, drawing conclusions and presenting results) and to reveal the student's theoretical knowledge obtained during the studies, mastery of professional terminology and information, presentation and argumentation of his/her viewpoints, the latter must contribute to new information much more substantially, deeper, more theoretically, and more complexly. The presented results must have a certain scientific value, must be valid for a wider range of problems, not only for the analyzed subject mater.

As given at the beginning of this chapter, one of the factors influencing the choice of the topic is the supervisor.

The role of your supervisor [3]
First important point - do not hesitate to contact your supervisor as soon as possible. You have probably already contacted him/her when signing for the topic. If not, it is vital for you to discuss not only **what** topic you will be working on, but also **how** you can best work on your thesis.
As usual, it is advisable to know from the beginning what type of personality you are and what your working style is. The enclosed self-test may help you, but it only covers some areas; you know yourself best and realize your limits.

A very similar analysis you can do for writing the thesis. Under Writing you will find a checklist of things you need to take into account throughout the work on your thesis.

Let's have a look at the role of each of the two parties involved in MT procedure. [4]

The role of the thesis supervisor
1. The supervisor gives the student directions, guidance and encouragement in his/her work. In an ideal case the guidance concerns the following steps and areas (of course, he/she is not doing it for you, just advises):
- finding relevant literature sources
- defining the scope of the topic
- setting the goals and research questions
- preparing the plan of the research
- suggesting relevant methods, including necessary equipment

- gathering, processing, and analyzing the data obtained in experiments
- presenting results and drawing conclusions from them
- suggesting the structure of the thesis
- suggesting strategies when working with sensitive data/company secrets,
- receiving research authorization, if necessary.

2. He/She follows the progress with respect to the student's research plan, assists the student in resolving the problems which may arise during the project.
3. The supervisor is one of the referees who assess the thesis.

The role of the student

1. The student is fully responsible for the completion of MT on an appropriate level.
2. Based on the consultation with the supervisor, the student should prepare a research plan and create a schedule for his/her work on MT and its completion, and determines what kind of guidance suits them best.
3. It is the student's interest to get the guidance from the supervisor, so the initiative is on the student's side (arranging meetings and negotiating what to do between the meetings).
4. The student shall complete the tasks which have been negotiated with his/her supervisor, and inform the supervisor of the progress in the work.
5. The student submits regularly the draft of the MT to the supervisor.

There are no fixed rules of the frequency of student - supervisor communication, it is fully up to the student to be initiative. It is recommended that they meet at least twice a month, or even more often as the deadline approaches. The length of the meeting depends on the amount of problems they are to deal with. Both parties must agree on the decisions about when to meet and the way they communicate. [4]

The frequency and content of supervision depends on the stage of work. If we divide all the process into 3 stages, each of them concentrates on different aspects.

Beginning stage. Supervisor provides guidance and advice on formulating the topic, defining the problem, setting aims, distinguishing between tasks and methods, and organising the paper. The student discusses the plan and the literature with the supervisor. The basic information on the thesis are entered into IS/STAG by a deadline (Faculty's directive) and are the base for the official assignment of the thesis, the original of which will be part of the printed version of MT.

Writing stage. The student submits the chapters and/or subchapters completed during the research process, and later the full paper to supervisor for comments by agreed dates. The supervisor points out the deficiencies or mistakes, weaknesses of composition and argumentation, evaluates the research methodology and formal features of the text (format, style, language). The student should regularly contact the supervisor, inform about the progress of work, problems, possible modifications of the agreed procedure etc.

Completing stage. At MT submission the author declares (and signs) that it is his/her original work, i.e. the work has been performed independently and student was observing the rights of other authors. The thesis shall be submitted in time, i.e. filed into IS/STAG (electronic version) and the printed version + CD delivered to the respective Department. The supervisor submits in due time a written opinion of the MT, and the student can read it, along with the reviewer's opinion, prior to defence. The supervisor's and reviewer's opinion are substantial for the assessment of the MT defence.

Note: What to Do if Somebody Refuses to Be Your Advisor? [5]

It may happen that there were some obstacles which prevented you from signing for a topic (you were ill or abroad in the critical time) early. Then the only choice is to find your own topic and contact a suitable person. If you ask a person to be your advisor and he/she refuses, the reasons can be:

- the topic - it may be unclear, poorly defined, too trivial or uninteresting for the person you have addressed;
- you as a personality - the person may consider you stubborn, offensive, lazy, irritating, arrogant, etc.
- your poor academic qualities - you are perceived as a poor thinker with not much brain.

In the first case you can change the topic, in the other two cases you have to change the choice of the supervisor. If the situation becomes critical, you have to go to the Head of your Department to solve the problem.

Sometimes the solution may be, for a specific topic, to find a specialized consultant or even a supervisor outside the University. This is mainly for more practically oriented theses. In this case both the topic and the advisor must be approved by the Head of the department.

You will save time and effort if you know exactly the MT procedure at the University. It is clearly given by Article 27.

From the view of Higher Education Act [6], MT is part of the degree, and it shall be publicly accessible. It becomes public after the submission through the University's information system STAG. In case the experimental part was measured in practice, professional or company secrets must not be included in the thesis; they shall be kept in the background material. If the client forbids the presentation of certain information in the paper, an additional, separate, confidential version of the report can be made with the information only for the client. Another choice is to make only one report, and the confidential information is presented in an appendix which is attached to the client's copy only.

Finally, here is some advice to help you in understanding the task of writing MT [7]:

1. **Write down your ideas.** You will have concrete text to get back to, to consider an idea later, you can modify it or change. It is not a good way to rely on your "good memory". Be sure you will forget if not all the idea, at least the thinking around in some time. If you do not write your ideas, they will be in a continual state of change and you will get a feeling that you are not going anywhere.
2. **Do not expect that your research will draw international attention -** be realistic in setting your aim. Your task is
   - to fulfil an academic requirement,
   - to conduct the research, which may be as important (or even more important) as the research results,
   - to learn from the research, get some experience.

If you can keep these ideas in mind while you are thinking through your research, you have a good chance to be successful. Of course, you are supposed to do your best, even if you know that your work will not be breathtaking.

3. **Be realistic about the time you can spend on the research project.** You have to finish your study duties, and the deadline is given and cannot be changed. Therefore, it is important to schedule, which, however, will be later refined.
   Levine [7] suggests six stages, each of which should be planned for a certain time. See the process of MT writing as one complex task, do not limit it to the stage where you presently are. If anything happens and you cannot complete one of the stages by the deadline, you must consider how it will influence the following stages.
   The stages are:
   a) Thinking about the topic
   b) Preparing the proposal
   c) Conducting the research
   d) Writing the draft of MT
   e) Consulting the research outcomes with others
   f) Revising and proofreading.

It is recommended to carry out a pilot study at an early stage to make sure that the experimental part will bring useful results. It would be very unpleasant to find out, after intensive studies of the literature on the topic, that the experiments do not work. Two months or so before the deadline is too short time to change the topic.

References

[1] http://web.utb.cz/en/docs/Rules_study_Examination.pdf

[2] VIHALEM, A., *A General Guide to Writing and Defending Papers.* majandus.ttu.ee/13191

[3] http://www.docstoc.com/docs/18603629/writing-your-dissertation

[4] http://hsvest.is/skraarsafn/skra/224/

[5] ROBERTS, C. M. *The Dissertation Journey*. Thousand Oaks: Corwin Press, 2004.

[6] http://www.msmt.cz/areas-of-work/the-higher-edcation-act

[7] LEVINE, S.J. *Writing and Presenting Your Thesis or Dissertation*. http://www.lulu.com/items/volume_1/91000/91564/1/print/91564.pdf

3. MT purpose, topic selection - practice

Self-test

The following self-analysis quiz may help your supervisor to find the way how to help you. Which of the statements apply to you?

1. I am good at managing my own work and do not need any reminders from the supervisor about what I should have already done, or how much time is left.
2. I am quite good at organising my own work, but would still appreciate some deadlines for partial tasks and reminders from time to time.
3. Time management can be a real problem for me. I tend to leave work till the last minute and only start working when a deadline is approaching fast!
4. I do not find it easy to bother my tutors – they are so busy, I do not like to be a pain in the neck.
5. I need lots of reassurance and will probably contact my tutors more often than I really need to.
6. I am clear about the requirements of the thesis and can develop a plan how to them to meet the final deadline.

These are just some of the possibilities; you know yourself best and realize your limits. The questions should only make you think about your cooperation with the supervisor at the very beginning of the process and let it know to your supervisor. [1]

Writing

Below you will find a checklist of things you need to take into account throughout the work on your thesis. The first four relate to the supervisor and must be solved at an early stage, next three are connected with the feedback and last two will help you complete your task successfully.

1. Let your supervisor know how much contact and support you would like.
2. Accept that there are limits to the amount of help that can, and should, be given through MT project.
3. With your supervisor come to an agreement on when you will meet and how you will contact him/her (e.g. by phone, email, in person).
4. Plan together some interim deadlines for the work, so that you are able to manage your time effectively (into details depending on you style of work, see above).
5. Make sure that you know from the beginning how your thesis will be assessed – what criteria will be applied to it.
6. Ask for access, where possible, to previous theses on a similar topic to yours, so that you can get an idea of the scope, structure, style and methodology used.
7. Consider the possibility to set a group of students with topics from the same area to get a feedback of your draft continuously. Of course, the same you are supposed to do for your peers - discuss, criticize, suggest. However, the opinion of your supervisor is always more important!
8. Find a suitable way of monitoring your progress, e.g. by using a checklist of tasks to be completed by certain dates.
9. Listen to, evaluate and respond to your supervisor’s feedback, by making notes and reflecting on what has been said or written, then applying the feedback to the next stage of your research or writing up. [1]

Study and Examination Rules of TBU in Zlín, Article 27 [2]:

2) The Head of Department sets a list of themes for Master's or Bachelor's theses upon discussing the matter with the Study Programme Board. A student has the right to propose a theme of his/her Master's or Bachelor's thesis under Section 62 Para 1f). The dates and manner of releasing and selecting themes of Master's or Bachelor's theses are set out in the internal regulations of the Faculty or TBU.

3) A Master or Bachelor's thesis assignment particularly includes brief characteristics of the task, goals to be reached, basic bibliography, name of the thesis supervisor and the submission deadline. A non-academic expert may be a thesis supervisor as well. The form of Master's and Bachelor's theses and the manner in which they must be submitted are set by the relevant Rector's directive, which might be supplemented by the internal regulations of individual Faculties, or the Rector's directive for study programmes implemented by TBU.

4) Upon the thesis supervisor's approval, a Master's or Bachelor's thesis may be submitted in the English language. Upon the Dean's approval, it may be submitted in another foreign language as well. In this case an extended abstract in the Czech language must be included. Upon the Dean's approval, the defence of a Master's or Bachelor's thesis may be held in the English language.

5) A Master's or Bachelor's thesis supervisor and its examiner(s) appointed by the Head of Department develop their reports of the thesis. A student must be acquainted with the reports at least 3 days prior to the date of the defence.

6) During Master's or Bachelor's thesis defence a student first presents main results of his/her work and then s/he comments on the remarks listed in the reports developed by the thesis supervisor and examiner(s). A debate follows afterwards.

7) If a student fails to defend his/her Master's or Bachelor's thesis, the board decides whether the thesis must be supplemented, rewritten or written on the basis of another theme. Reasons for the board decision must be stated in the final examination record.

8) If a student fails to meet the fixed deadline for submitting his/her Master's or Bachelor's thesis, s/he receives the "unsatisfactory" grade, unless s/he submits an excuse or in the event that the excuse is not accepted. The excuse must be submitted to the Dean, who is responsible for making the final decision.

References

[1] http://www.docstoc.com/docs/18603629/writing-your-dissertation
[2] http://web.utb.cz/en/docs/Rules_study_Examination.pdf

4. Sources

An inevitable part of MT is a literature review, where you show that you are familiar with the area of your research, you know the state of the art, i.e. what has already been done and where there are still gaps. Briefly "a literature review is a paper that compiles, outlines and evaluates previously established research and relates it to your own thesis." [1]

The literature review presents one of the greatest challenges of a scientific paper, which MT actually is, even if on a lower level. The literature review:

- Provides a conceptual framework so that the research question and methodology can be better understood.
- Demonstrates that the researcher is aware of the breadth and diversity of literature that relates to the research question, i.e. he/she is familiar with the state of the art.

In your MT you should be able to provide an integrated overview of your field of study, i.e. to present the most important and relevant theories, models, studies, and methodologies. You should indicate how they are relevant to your project, and to present common and different feature compared to your MT. To create a literature review does not mean just to copy or paraphrase the ideas from the original sources. On the contrary, it must compare and combine the ideas of previous researchers and apply them to your specific topic.

A good literature review demonstrates that a number of different approaches are taken into consideration, in combination, which will help you to produce an original study. The following ideas, or questions, may help in structuring this section:

- What scope of literature is relevant to your research topic?
- What is the history of your area of study?
- What theoretical model(s) relate(s) to your research topic?
- What different methodologies have been used by other researchers in your area? (Pay close attention to this item as it will decide about your experimental work).
- What results have previous researchers reached in a similar case? What are the most recent research findings in your area of study?
- What gaps and contradictions exist among these findings?
- What new research questions do these findings suggest?
- What structure suits my literature review best?
- What should you leave out?
- What quotations should you include (if any)? [2]

Primary and secondary sources

As the term indicates, this part of your MT is based on literature. Elaborating the literature review you will use **primary** and **secondary** sources. The former reflect the research, events, i.e. come directly from the source or person; they are original materials, which have not been filtered through interpretation. The latter, on the other hand, interpret primary sources. Primary sources in the area of technology are mostly original research papers based on experiments or modelling, patents and statistics; secondary sources, on the other hand, are represented by textbooks, monographs, literature reviews in journals, encyclopaedias and reference books.

In writing MT it is recommended to start with secondary sources as they give you overall information on the topic. First you can go through previously written theses on a similar topic,

where you may not only consider what is good and what is bad in the thesis (i.e. what you would like to apply in your work), but also the references will give you a good start to the sources. However, you will have to keep in mind that since finishing the thesis some other studies may have appeared which you must cover.
After the inspiration in other people's MT you should read books and textbooks written by recognized personalities in the area (and also your supervisor or other expected members of the defence committee).
Having studied relevant secondary sources, which are on a more general level, you are obliged to read primary sources. They get you closer to your topic as they report on concrete research. Selecting among different journals, prefer those with high impact factor (in an ideal case) or at least those which have been reviewed.

Sometimes considered secondary, sometimes tertiary are encyclopaedias. Today, two types of encyclopaedias are distinguished: those which are edited (i.e. traditional encyclopaedias such as Encyclopedia Britannica) and those that can be written by anybody (e.g. Wikipedia). The former can be used to get a definition or explanation of a term, the latter, however, are not recommended since they may contain misleading ideas.

Both primary and secondary (+ some tertiary) sources can be found in the University Library, often in the electronic form, so it is not necessary to be physically present in the Library, you can study also from other computers at the University.

Finding relevant literature and evaluating it

An essential skill for finding suitable literature is to choose the right keywords. They must be neither too general, nor too specific. In the former case the number of sources obtained from a database would be huge, in the latter you will get only very few sources (if any). None of these cases is good; if this happens, you have to either specify or generalize the keywords. When you have an appropriate number of findings, you should evaluate them from the viewpoint of relevance, content, origin and availability.
If you consider the **origin**, you actually assess the publisher. For research papers this means well-known publishers that choose the contributions for publishing after reviews, in case of books it means that the authors are recognized personalities in the area. In most areas, there are often "bibles" from the founders of the area, which are very often used and recommended to include.
On all accounts, avoid unreliable material from the Internet, where anybody can place any rubbish and also articles whose author is unknown (e.g. Wikipedia).

The first indicator and help for you indicating whether to read or not is the abstract. If this sounds useful, you can read the whole article with a high chance that it will provide relevant information to your topic.

When you have gathered heaps of material dealing with your topic, you will probably feel satisfied by the time when you find out that not all material can be used, so you will have to prioritize, it means sort the articles by **relevance** to your topic. Because the process of seeking information and organizing knowledge is cyclic, your prioritization may change later when you know more about the topic, so save various versions of the text.

Another criterion for the selection can be **availability** of the material. Some sources are difficult or nearly impossible to get. Think twice if this is worth the time it will take. If you have a choice, work economically.

A primary orientation in sources of information helps to prepare a schedule for MT development. Information is more thoroughly worked through, analysed and synthesised later in the process of writing. The selection of sources for in-depth research must be diverse including many renowned authors and writings of various level (monographs, collections of articles, journals etc.), It is also required to use various sources.; in our case primary and secondary sources should be balanced and you should use a large scope of sources to see the problem from different viewpoints.

Reading skills

Books

The skills of reading suppose relevant experience in the given area. It requires effort to attain special experience, the same as e.g. in laboratory experiments. If you do not have a slightest idea what the book is describing, you can hardly get relevant information from it.

In order to get the required information in a reasonable time, you must be able to read efficiently. On the web you can find some useful advice on how to read effectively. [3] The most important ideas are summarized in the following:

Adler and van Doren [4] distinguish four types of reading: elementary, inspectional, analytical and syntopical.

Elementary reading is taught in elementary schools, so we are not going to deal with it. **Inspectional reading** is applied when you are looking for a specific piece of information, i.e. systematic skimming and superficial reading. Inspectional reading helps you decide if you should choose this source or not. In the skimming phase, you consider the title page of a book and the contents; this will give you an idea of the topic and scope of the book. Superficial reading means reading through the source with the aim to get basic ideas, not details.

Analytical reading is more complicated as it includes "classifying, coming to terms, determining the message, criticizing the book, and author" [4]. This is typically used when you have one source. The most sophisticated is **Syntopical reading**, which means reading multiple books on the same subject; one source makes you open another one.

It is important to read actively. This not only prevents you from falling asleep but also gives you tangible evidence of your work - notes you write on a piece of paper or in your PC, or marking in the copy of the text, i.e. highlighting, underlining, vertical lines or your comments at the margin, numbering items, circling keywords, phrases or sentences, joining ideas with lines, using arrows to stress the consequence, etc. (Of course, you cannot do this in books loaned from libraries.)

Most often used way of studying literature during MT elaboration will be analytical reading. Here are some ideas how you should proceed:

First, find what the book is about (topic) and what type of book or text you are reading (theoretical/practical). You should also define the scope - the subject matter in general or some specific features? Then, follow the structure of the text - what are the major parts, what

is the relation between them? Make your own notes, do not just copy the contents (remember - active reading!). And finally, try to identify what problems the author is trying to solve.

Then, in the skimming phase, you will try to interpret the book's content. At the beginning you should interpret the key words, i.e. find their definitions or explanations. Note that the terms that are important to the author may not be the same as those the reader considers vital. That is because each of them looks at the problem from a different point of view, in different context. This is also the stage where you should consult dictionary for unknown words. They will most probably frequently repeat in the text.

After it you will concentrate on the author's propositions of how to deal with the issue, which must be supported by reasons, must be justified (*If this happens, the result will be…, This is caused by …).* You must also find, or create, arguments for statements.

You should then determine which of the issues stated the author has solved and which are still to be dealt with. Finding a gap in the previous research you create a space for your own research.

Research papers

Research papers differ from (text)book (discussed above) in a number of aspects: They deal with more topical issues, the topic is narrower and the information is "deeper". Formally they are shorter and contain keywords as a separate part and an abstract, which makes them easier to find in databases and consider their relevance for your MT. And with the use of electronic databases this is even easier.

References

[1] http://www.uhv.edu/ac/wac/litreviewgeneral.asp
[2] HIGSON-SMITH, C., PARLE, J., LANGE, L., TOTHILL, A. *Writing your Research Proposal.* http://www.nrf.ac.za/methods/proposals.htm
[3] http://www.tml.tkk.fi/Opinnot/Ohjeita/howtoread.html
[4] ADLER, M. J., VAN DOREN, CH. *How to Read a Book*. Revised and Updated Edition. Simon & Schuster 1972, 426 pages. ISBN 0-671-21209-5.

4. Sources - practice

Finding the source - examples of databases

It is the task of the student to find and work through the sources of literature. Electronic information search is enabled by the reference databases

- FSTA - http://www.ovid.com/site/catalog/DataBase/93.jsp,
- SciFinder Scholar - http://www.cas.org/products/sfacad/index.html),
- on-line databases of full texts
  EBSCOhost - http://web.ebscohost.com/ehost/search?vid=1&hid=8&sid=57cfc3da-2dca-445f-a7c4-a48ba38b7a0d%40sessionmgr11 ,
- ScienceDirect - http://www.sciencedirect.com/,
- http://juno.concordia.ca, www.rapra.net (plastics),
- subject gateways (professional information sources),
- search engines for finding materials on the Internet
  Google - http://www.google.com/advanced_search?hl=en, http://scholar.google.com/
  Yahoo - http://www.yahoo.com).

Reading skills

In the following you are to practice **skimming** and **scanning**. The former means superficial reading, the latter is reading for specific information. [1]

Exercise

You are going to read some information about watches. For questions 1–8 choose from the watches A–G. Some of the watches may be chosen more than once. There is an example at the beginning (0).

Which watch or watches would be useful for someone who:

wants to know when someone is trying to contact them?	0 F	
needs to make calculations?	1	
enjoys deep-sea diving?	2	
wants to keep a check on their health?	3	
needs to remember both phone numbers and appointments?	4	5
doesn't want to take too much exercise?	6	
may need to know the time in another country?	7	
sometimes needs to use their watch to dial telephone numbers?	8	

For question 9 choose the answer (A, B, C or D) which you think fits best according to the text.

9 The purpose of this text is to

A describe some new developments in watches.
B warn the reader about cheap, unreliable watches.
C explain how watches work.
D advise the reader about the best watch to buy.

Super-watches

Telling the time is the very least the latest generation of watches can do. From monitoring your health and the weather to making phone calls, it's all in a day's work for the super-watch.

An office on your wrist

Wristwatch personal organisers like these will tell you the time on the other side of the world, remind you to make a call at a certain hour, find you the number and do a few calculations, all at the flick of a switch – or a touch of the screen. They can store up to 100 telephone numbers. The touch-screen Casio VDB is even programmed to give the day of the week until the year 2089.

The Casio VDB 1000A–1 (£119.99) holds up to 100 phone numbers and appointments, features a stopwatch, world time in 24 zones and an automatic Summer Time adjustment.

B

The DBC-62 (£39.99) has a keypad for entering messages, phone numbers, appointments, or for using as a calculator.

The super-watch as an aid to fitness and health

The watchmakers are also competing to develop watches with new functions for the health and fitness markets. As a result, you can now strap on a 'personal fitness data manager' before exercising – and afterwards check you didn't overdo it.

D

Along with traditional timekeeping functions, Casio's BP-100 (£113.99) measures your pulse rate and blood pressure. Just place the first and second fingers of the right hand onto the sensors and results are displayed in graphical form at the top of the screen.

The Casio AW60 (£59.99) calculates the number of calories burned while performing a specific exercise, and an alarm sounds when the target is reached so that you can stop the activity before it damages you. Simply enter details, such as age, sex and build, along with the activity you're performing.

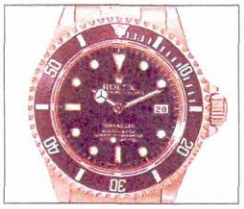
In place of a pager

Some watches with personal communications functions can dial telephone numbers. Others act as pagers by making a noise when someone wants to telephone you.

E Casio's DBA-800A Phone-Dialler (£45.99) automatically dials telephone numbers when your phone is on the hook and can store up to 50 numbers.

F

The Swatch Peipser is a pager that can recognise four preset numbers and make a distinct audible tone for each (so far unavailable in UK).



Deep and still meaningful

G

The Rolex Sea-Dweller 4000 (£1,945) can be used underwater at depths of up to 1,219 metres. The steel casing has a tiny valve allowing air to escape and so preventing explosive decompression during ascent.

You can guess the general topic area from the title of the article, then you can get some more ideas from subtitles, and also graphical presentation (figures, graphs, pictures) can give you a gist what the text is about. Thus, without long reading you can decide if the text is suitable for you or not.

Note taking

Reading for information, which is your case in MT elaboration, also includes note taking. On the web you can find a number of instructions and activities how to take notes from reading effectively. Here are some of the webpages:

http://www.studygs.net/booknote.htm
http://www.writing.utoronto.ca/advice/reading-and-researching/notes-from-research
course - reading and note-taking skills
http://openlearn.open.ac.uk/course/view.php?id=2502

Reference

[1] O´Connell, S. *Focus on First Certificate*.Harlow : Longman. 1996.

5. Plagiarism

Plagiarism is a hot topic, intensely discussed nowadays. By definition, it is ”the unauthorized use or close imitation of the language and thoughts of another author and the representation of them as one’s own original work.“ [1]

With extended use of computers it is very simple to plagiarize (i.e. to use Ctrl+C, Ctrl+V), so it is very important to bear in mind the ethics of academic work. Here is some advice:

- From the very beginning of your note-taking, use your own words, do not copy-paste. It is quite difficult later to recognize and change the copied parts, at least not without marking the text clearly with quotation marks and source. Writing in your own words shows that you understand what you have read and can interpret it. So, first read, then put the source aside and write using your own words.
- Building the reference list from the very beginning of your work, i.e. write down all possible information about the source (at least the author, title, form of publication, publisher, time and place of publication or date of access to the website).

For each source you have studied write down all the necessary information for further reference, i.e. make an annotated bibliography (short summary, keywords, questions or comments why the source may be useful to you). This will later enable you to find a specific source you are sure you have read, for instance if you have a gap in your work.

As said before, plagiarism is understood as a piece of writing that a person copied from someone else and presents it as his/her own work. In general, any ideas or materials taken from a source must be acknowledged, unless the information is common knowledge. For you as an author of MT it means that you must not take or reproduce ideas, theories, opinions, graphs, figures or formulas which were created by another person without proper acknowledgment.

It has to do with academic ethics and honesty. Thus, it is absolutely vital with all academic work that it contains accurate referencing of the sources where the ideas were taken from. For any academic writing it means that it must be clearly seen what are your thoughts and what are somebody else’s.

In practice, every research area has some specifics, even if the basic rules are the same. So do not hesitate to contact your supervisor to introduce you to these specifics. Make sure that all of your references to the sources are made accurate and in accordance with the academic conventions of referencing and citations.

The use of the Internet enables to obtain information from various sources and what is more, to obtain it in electronic form. So, it is very tempting to use copy-paste method (without any reference); it saves time and effort, say some people. **NEVER PERMIT YOURSELF TO ACCEPT THIS IDEA!!!** Besides breaking rules of academic honesty, it is also considered a theft of intellectual property, which is illegal (as any other form of stealing or cheating).

The fight against plagiarism is a worldwide movement, and our University also participates in a project which provides software to check theses originality (called “Theses”), which compares the submitted work with other theses in a huge database and produces a report whether or not, and to what extent, the concrete thesis resembles to previous ones.

5. Plagiarism - examples

Quoting, Paraphrasing, and Summarizing

To avoid plagiarism, you should be able to distinguish these three ways of incorporating other writers' work into your own. They differ in how close your writing is to the source writing.

- **Quotations** are identical to the original, using exactly the same words. Thus they only cover a short part of the source. In technology this is rarely used, only for definitions.
- **Paraphrasing** means putting a passage from source material into your own words. Paraphrased material is usually shorter than the original part of text, i.e. it covers a little broader segment of the source and condenses it slightly.
- **Summarizing** involves putting the main ideas into your own words, including only the main points. Summaries are significantly shorter than the original and take a broad overview of the source material.

In all three cases the ideas must be attributed to the original source and author.

Reasons for quoting, paraphrasing and summarising

Referring to the original source in any of these ways has various reasons. They are used to:

- show that you are familiar with the area and state of the art (of, course, you must use latest sources!), you are a member of the community;
- add credibility to your writing (citing distinguished personalities in the area);
- provide support for your claims, call attention to a position that you wish to agree with (this is not only my idea, also name of the person has the same opinion) or, on the other hand, disagree with;
- refer to work that leads up to the work you are now doing (this has been done – this has not been done – I am going to do it);
- give examples of several points of view on a subject;
- highlight a particularly striking phrase, sentence, or passage by quoting the original (e.g. a new phenomenon is discovered in the area and someone coins a new expression for it);
- distance yourself from the original by quoting it (I am just referring, these are not my ideas, don't blame me);
- expand the breadth or depth of your writing.

Writers frequently combine summaries, paraphrases, and quotations. As part of a summary of an article, a chapter, or a book, a writer might include paraphrases of various key points blended with quotations of striking or suggestive phrases as in the following **example**:

> In his famous and influential work On the Interpretation of Dreams, Sigmund Freud argues that dreams are the "royal road to the unconscious" (*page*), expressing in coded imagery the dreamer's unfulfilled wishes through a process known as the "dream work" (*page*). According to Freud, actual but unacceptable desires are censored internally and subjected to coding through layers of condensation and displacement before emerging in a kind of rebus puzzle in the dream itself (*pages*). [1]

Example

Here you can see what is considered plagiarism and what fair inspiration by other peoples´ ideas.

The original passage:

> Students frequently overuse direct quotation in taking notes, and as a result they overuse quotations in the final research paper. Probably only about 10% of your final manuscript should appear as directly quoted matter. Therefore, you should strive to limit the amount of exact transcribing of source materials while taking notes. Lester, James D. **Writing Research Papers**. 2nd ed. (1976): 46-47.

A legitimate paraphrase:

> In research papers students often quote excessively, failing to keep quoted material down to a desirable level. Since the problem usually originates during note taking, it is essential to minimize the material recorded verbatim.

An acceptable summary:

> Students should take just a few notes in direct quotation from sources to help minimize the amount of quoted material in a research paper.

A plagiarized version:

> Students often use too many direct quotations when they take notes, resulting in too many of them in the final research paper. In fact, probably only about 10% of the finial copy should consist of directly quoted material. So it is important to limit the amount of source material copied while taking notes.

Note: As you can see in the last case, also replacing words with synonyms is considered plagiarism.

Reference

[1] http://owl.english.purdue.edu/handouts/research/r_quotprsum.html

Quoting, Paraphrasing, and Summarizing

These three ways of incorporating other writers' work into your own writing differ in how close your writing is to the source writing.

- **Quotations** are identical to the original, using exactly the same words. Thus they only cover a short part of the source. In technology this is rarely used, only for definitions.
- **Paraphrasing** means putting a passage from source material into your own words. Paraphrased material is usually shorter than the original part of text, i.e. it covers a little broader segment of the source and condenses it slightly.
- **Summarizing** involves putting the main ideas into your own words, including only the main points. Summaries are significantly shorter than the original and take a broad overview of the source material.

In all three cases the ideas must be attributed to the original source and author.

Reasons for quoting, paraphrasing and summarising

Referring to the original source in any of these ways has various reasons. They are used to:

- show that you are familiar with the area and state of the art (of, course, you must use latest sources!), you are a member of the community;
- add credibility to your writing (citing distinguished personalities in the area) ;
- provide support for your claims, call attention to a position that you wish to agree with (this is not only my idea, also ... has the same opinion) or, on the other hand, disagree with;
- refer to work that leads up to the work you are now doing (this has been done – this has not been done – I am going to do it) ;
- give examples of several points of view on a subject;
- highlight a particularly striking phrase, sentence, or passage by quoting the original (e.g. a new phenomenon is discovered in the area and someone coins a new expression for it) ;
- distance yourself from the original by quoting it (I am just referring, these are not my ideas, don't blame me) ;
- expand the breadth or depth of your writing.

Writers frequently combine summaries, paraphrases, and quotations. As part of a summary of an article, a chapter, or a book, a writer might include paraphrases of various key points blended with quotations of striking or suggestive phrases as in the following example:

> In his famous and influential work On the Interpretation of Dreams, Sigmund Freud argues that dreams are the "royal road to the unconscious" (*page*), expressing in coded imagery the dreamer's unfulfilled wishes through a process known as the "dream work" (*page*). According to Freud, actual but unacceptable desires are censored internally and subjected to coding through layers of condensation and displacement before emerging in a kind of rebus puzzle in the dream itself (*pages*). [2]

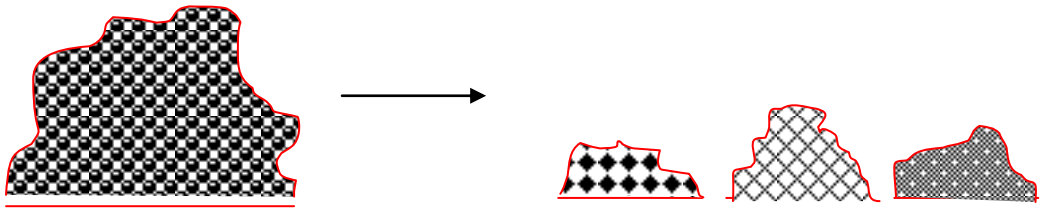
References

[1] http://dictionary.reference.com/browse/plagiarism

[2] http://owl.english.purdue.edu/handouts/research/r_quotprsum.html

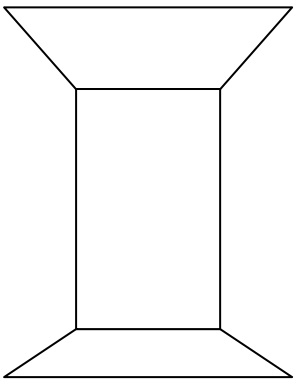
6. Organizing ideas in literature review

Having read basic literature on your research area, you have a number of more or less unorganized ideas. You can imagine this as a "heap" of things you have collected, a pel-mel, without any internal system. First, you will divide them into "subheaps", alike together. Thus you will get groups of similar things, i.e. ideas on the same topic. The groups should now get names (preliminary titles for chapters, which will be used for the outline). The ideas in the "subheap" must be now put in a logical order, separately in each group. When the ideas are in a logical order, you will start working with words - you will develop the ideas and join them together with linking words/sentence connectors, keeping in mind text organization (paragraphs).
Schematically the process can be shown like this:



After this general view of the process, let us have a closer look at it.

It is common in most academic papers, and literature review (LR) is no exception, that they contain at least three basic parts: introduction, main body and conclusion. Graphically these parts can be shown as follows:



Introduction of LR

Main body of LR

Conclusion of LR

Introduction starts on a general level, with common features of your research area. Then it becomes more and more specific and finishes with your topic issues, which continue in the main body.

The main bode can be organized in different ways:

- chronologically - not very common in technology, unless you want to show the history and development in the area;
- thematically - individual issues and topics of the area are dealt with;
- methodologically - the time factor is not important, methods of previous research are followed.

When you have decided what strategy of the main body organization is best for your purpose, the process of organizing ideas is much easier.

The information given in the main body is concluded on a more general level in the last part of LR. [1]

As said before, reviewed literature is organized in a logical manner that best suits the topic and the goal of the thesis. The chosen way of organization must draw attention to similarities and differences among the reviewed literature, relationships between sources (accordance, contradiction, supportive arguments) not just to give the information from different sources independently. And what is most important, all the ideas must be **related to your topic**. Thus, carefully planned organization is a vital component of any literature review.

The complete process of LR elaboration can be summarized as follows:

1. Find several articles that deal with your research topic. Sometimes it is helpful to review the bibliography of one of the first scholarly sources that you find and compare it to the bibliographies of other sources on the topic. If the same source is listed within several of these bibliographies, it is probably a fundamental, credible source that will help you in your review.
2. Before you begin reviewing literature, realize that you are to accomplish two aims:
   A. Defining your research problem, finding a gap in previous research, continuing previous research, etc., it means creating a research space.
   B. Reading and evaluating relevant sources which deal with your research problem, i.e. gaining a deep insight into the issue.
   Both aspects, however, are followed simultaneously.
3. While reading literature sources, take notes with complete bibliographical information and comments for each work you are going to include in LR.
4. Compare the articles/texts by evaluating similarities and differences among them. This will be the initial stage in the formulation of your thesis, i.e. the basic, clearly and briefly pronounced idea of your MT topic or purpose.
5. Formulate a clear thesis (means basic idea – remember the two meaning of “thesis”)that can be logically supported by the LR.
6. Go through the articles again and write down any notes that may relate to your thesis. Decide about the organizational pattern best suitable for the topic of your review.
7. Build the outline for LR.
8. Create an introduction which will introduce the topic, reveal the thesis statement, and arrange major issues.
9. Based on this, write the main body of LR keeping in mind the strategy you have chosen.
10. Conclude from the information given in the main body - point at similarities and differences on the topic.
11. Complete the final draft of the literature review.
12. Check over the final draft for grammar and punctuation errors. Submit to your supervisor as a whole. (Of course you have consulted individual issues previously, as they appeared.) [2]

To assess LR by yourself, you can use this checklist [3]:

- Is the thesis statement clearly pronounced at the beginning of LR?
- What are the crucial items of LR? Are they clear from the text?
- Are they relevant to the topic and discussed in its context?
- Are they arranged properly?
- Is the arrangement indicated at the beginning?
- What is the purpose of your research? What research methods will be used? Are these covered in LR?

- Are different interpretations of the previous research results justified?
- Is LR objective and unbiased?
- Are all unfamiliar terms defined or described?
- Is the background information incorporated?
- Are all the references given? Are they complete and consistent?
- Is the format of references as required by the supervisor/Faculty rules?
- Is the text pleasant to read, with good text flow?
- Is it without mistakes in grammar and spelling? [4]

References

[1] http://www.unc.edu/depts/wcweb/handouts/literature_review.html
[2] http://www.uhv.edu/ac/wac/pdf/litreview.pdf
[3] http://www.coe.hawaii.edu/documents/edep/LitRev.pdf
[4] Taylor, D., & Procter, M. (2001). *The literature review: A few tips on conducting it.* http://www.writing.utoronto.ca/advice/specific-types-of-writing/literature-review

7. Outlines

When you have gone through the basic relevant literature, have written the relevant ideas and get acquainted with the topic, it is time to roughly organize your ideas in the form of an outline.

You may ask why it is useful to create an outline, why not start writing the text immediately. The answer is: A good outline is helpful in many ways:

- You can organize your ideas (without loosing them in full text) and see the relationship between them.
- Your material will be presented in a logical form, so the relationship between ideas will be apparent at first sight.
- The outline will give you visual design for writing.
- The outline will help you in the writing process providing you an overview at any time.
- In the outline you will specify the scope of your research.

Of course, you must take into account, as in any academic writing, why you are writing, for whom and what message you want to communicate.

The process of building an outline can be divided into several steps you should follow:

1. Determine the **purpose** of the paper (prove your ability of doing relatively independent research).
2. Analyse the **audience**, i.e. who are the potential readers, how much they know about your topic, what they expect to learn from your MT (readers – your supervisor, opponent + people form the area) .
3. Formulate the **thesis** = main idea(s) of the work.
4. List the major ideas you want to include = **brainstorming**.
5. Put related ideas into groups (subsections) = **organizing**.
6. Arrange material in subsections: general – specific
   abstract – concrete = **ordering**
7. Create headings and subheadings - **labelling**.

Owl [1] as well as some other sources, recommends using the following principles:

- parallelism
- coordination
- subordination
- division.

Let us see what these expressions mean:

1. Parallelism - the items have parallel (similar) structure.
2. Coordination - the significance (level of generality/importance) of the information in parallel items is the same.

3. Subordination - the information in items on a higher level should be more general, i.e. in headings more general than in subheadings.
4. Division - a heading can be divided into two or more subheadings, not into only one. (On the other hand, too many subheadings are perceived also negatively. Generally, about ten of them is considered a maximum, even if there may be some exceptions. If this appears, you can divide a heading into two, each with an appropriate number of subheadings.)

This is demonstrated on examples from the area of IT.

The outline will definitely change during the process of writing MT and in the end it will change into part of Contents.

Unfortunately, the principles given above are not always followed. For the purpose of MT at TBU the formatting is given and is specified in the Rector's directive 12/2009 on http://web.utb.cz/?id=0_0_12_3&iid=0&lang=cs&type=0. If you use the template (English version), you will save time and limit criticism from your MT opponent.

Reference

[1] http://owl.english.purdue.edu/owl/resource/544/01/

7. Outlines - examples

Outlines should be based on

❖ parallelism = headings coordinated in parallel form

e.g.
1) Computers
2) Programs
3) Users

or

1) Home computers
2) Commercial programs
3) Experienced users

not
1) Computers
2) How to create programs
3) Ways of use.

Here the first is just a noun, the second is a full sentence and the last a noun phrase.

❖ coordination = equal significance/importance expressed by the same designation (numeral/letter)

e.g.
A. Word processing programs
B. Database programs
C. Spreadsheet programs

not
A. Word processing programs
B. Microsoft Word
C. Page Maker

The first item is on a higher level of generality/importance - it includes the other two.

❖ subordination = ordering ideas (closely connected with the previous, also about the level of generality). More general items are on a higher level. Here you can go from general to specific or from abstract to concrete.

e.g.
A. Word processing programs
    1. Microsoft Word
    2. Word Perfect
B. Desktop publishing programs
    1. Page Maker
    2. Quark Express

not
A. Word processing programs
1. Microsoft Word
2. Useful
3. Obsolete

The items are not consistent, first is OK, a type of Word processing program, but the other two give the characteristics.

❖ division = you can divide into at least 2 parts (A, B....1,2....); logically, you cannot divide into one part, it is not division.

e.g.
A. Word processing programs
    1. Microsoft Word
    2. Word Perfect
B. Desktop publishing programs
    1. Page Maker

2. Quark Express

not
A. Word processing programs
1. Microsoft Word
B. Spreadsheet programs
1. Microsoft Excel

In this case better headings would be
A. Microsoft Word
B. Microsoft Excel

❖ form = consistent form of items. You can use Arabic or Roman numerals, capitalized or lowercase letters, the same type on the same level of significance.

e.g.
A. Word processing programs
1. Microsoft Word
2. Word Perfect
B. Desktop publishing programs
1. Page Maker
2. Quark Express

not
A. Word processing programs
1. Microsoft Word
2. Word Perfect
3. Desktop publishing programs
a) Page Maker
b) Quark Express

In the following you will find the **application** of the above given **rules** on an example from IT area.

The purpose of MT is to show how programs written for microcomputers relate to the process of writing, the thesis (main idea) then reads " Microcomputer programs can have a positive effect on students´ writing if both the potentials and limitations of the programs are understood."

Microcomputer Programs and the Process of Writing

1. Major Steps in the Writing Process
   1.1. Organizing
   1.2. Writing the first draft
   1.3. Evaluating
   1.4. Revising
2. Writing Programs for the Microcomputer
   2.1. Types of Programs and Their Relationship to the Writing Process
      2.1.1. Thought
         2.1.1.1.Use in organizing
         2.1.1.2.Use in revising
      2.1.2. Word Processors
         2.1.2.1.Use in writing the first draft

2.1.2.2.Use in revising
2.1.3. Analytical programs: grammar, style, spelling
2.1.3.1.Use in evaluating
2.1.3.2.Use in revising
2.2. Positive and Negative Aspects of Computer Writing Programs
2.2.1. Positive features
2.2.1.1.Less time spent on repetitive or mechanical writing tasks
2.2.1.2.Greater flexibility and versatility in writing process
2.2.1.3.Increased revision strategies
2.2.1.4.Specific learning possibilities
2.2.2. Negative features
2.2.2.1.The increased time spent on learning software programs and computers
2.2.2.2.The availability of hardware and software
2.2.2.3.The unrealistic expectations of users
2.2.2.3.1. A cure-all for writing problems
2.2.2.3.2. A way to avoid learning correct grammar/syntax/spelling
2.2.2.3.3. A method to reduce time spent on writing proficiently
2.2.2.3.4. A simple process to learn and execute
2.3. Future Possibilities of Computer Programs for Writing
2.3.1. Rapid change
2.3.2. Improved programs
2.3.3. Increased use and availability
2.3.4. More realistic assessment of value - critical work

(In this example, automatic numbering in Microsoft Word was used. Your form will slightly differ: you can only use three levels, i.e. you cannot label the item with 2.2.1.4, and in the template you will use the number is only finished with comma on the first level, e.g. “1.” but “1.2”.)

8. Features of sections

Although each MT has its specific topic, all have a lot in common - the goals, basic structure, and inside it the features of individual sections.

The structure has settled in the form which is given in the template for MT at the University (SR 12/2009 [1]).

In the following the features of the sections will be given in the order as they appear in MT. In fact, however, the first parts are written last.

ABSTRACT

Abstract is an indispensable part of MT. Typically it is just one paragraph but for the thesis written in English you are obliged to produce a longer one in the Czech language (Study and Examination Rules of TBU, Art. 27, Para. 4) [2]

A safe way how to write the abstract is to give it the form of very much shortened MT. In other words it will include:

- purpose of the research (goals and tasks)
- methodology (and materials)
- main results of the research
- principle results and conclusion(s).

The abstract is the last part of the thesis to be written and must be very carefully worded to get the most information in fewest words. It should be able to stand alone, so no references to the main text are possible; e.g. if you introduce an acronym in the text and want to use it in the abstract, you must introduce the acronym again in the abstract.

ACKNOWLEDGEMENTS

Acknowledgements in an integral part of MT, it appears before Contents. Here you not only express your thanks to people who contributed to successful finishing of your work, but also clearly state what you have taken from other sources. Thus, Acknowledgement can have various elements. It will surely contain thanks to your supervisor, professional help (technician in the laboratory), your family and friends, financial support of the sponsor (if relevant), and sometimes also disclaimers (e.g. “However, none of them is responsible for any remaining errors.”).

This is the only section where you can use pronoun “I". Otherwise it is not recommended.

CONTENTS

Table of contents, or just Contents, is the part which lists the page number of the beginning of each major section and subsection of the thesis. In the template designed for TM at the University you are supposed to use automatic contents, the tool which, upon request, updates the list.

The Contents part is developed from the outline, which you modify during the specification or development of the original plan of MT.

INTRODUCTION

The introduction should give the relevance and importance of the analyzed topic for the practice (or theory), and clearly identify the object or the research. Sometimes it also reveals the motives for selecting a particular topic (but no personal stories!). Thesis tasks and goals should be briefly formulated in this section as well, the same as the methods used in the research, including statistical treatment of the result, if applicable; all this only very briefly and generally.

The introduction may also indicate the structure, if it differs from common practice (more often seen in the area of information technologies, where the structure has not settled yet).

In short, Introduction section is a birds-eye view of the thesis.

Body of MT

The basic division of the main body of MT is into Theory and Analysis.

I. THEORY

This part is based on the relevant literature you have studied. At this stage you should be sure about the exact topic of the thesis, and have an idea of how you will carry out the research. Otherwise, your writing can be just wasting time because if the topic or the methodology changes, you will have to redo substantial parts of the theoretical section.

Most of Theory is composed by Literature review, which summarises past research and writing on the same or similar subject and their impact on the study. All perspectives are presented (both positive and negative aspects).

This section is usually organized by idea (not by author or publication), e.g. various approaches to the problem.

The length of the theoretical section may differ in dependence of the character of the thesis. In the standard form it is about a third of the whole MT, but ask your supervisor; he/she knows best what is common in the area. Some fields need more complex theory, some give just basic information, which is then largely developed in the experimental part.

The theoretical part should:

- explain explicitly the main concepts, theories, models and terms (the meaning and the scope of some expressions may differ depending on the area, so specify the terms in the context of your MT topic);
- define the area of research and the state of the art, i.e. present state of the development;
- give a complex literature review on the topic, including recent studies and publications of all types - monographs, research papers, articles, etc., it means thorough description of the state of knowledge in the research field.

In the theoretical part you should prove that you is familiar with the given area and understand its context and consequences for the practice.

Of course, all literature sources used in this part will be cited properly. It is also important to interpret the statements of the original sources authors in the right way. You should always bear in mind and indicate why you are using the ideas from the source, to compare different sources and discuss them from the viewpoint of your specific topic. Do not fail to produce

text with logical organization of ideas and good text flow, not just list of separate ideas taken from different sources. It is important to keep a good balance between the amount of the citations and your own words.

At the end of the theoretical part you should clearly state the research question or problem you are going to deal with in your research. It should

- justify, by direct reference to Literature review, that your question has not been answered yet (e.g. showing how previous approaches failed, how your approach may be useful),
- say why it is worthwhile to answer the question,
- state, in a concise way, the issue your thesis solves.

II. ANALYSIS

This section describes how the research was carried out and what results were obtained.

Methodology. This will include clearly specified methods and materials, measuring instruments and conditions. Basically, it should give the reader the information needed to evaluate the reliability and validity of the research results. Or, in other words, you should give here all the details which are relevant for anybody who wants to repeat your research. Thus, where you are using standard methods, you will give the number of the standard or the name of method or you will refer to the source where the method is described in detail. When, on the other hand, you develop a new method, device or instrument, do not forget to give every detail. Always bear in mind that you should present what is necessary to know to **reproduce the same research**.

Results (and Discussion). Here the data analysis and results (including statistic treatment) are systematically and logically presented. The data and main outcomes should be preferably presented in the form of figures and tables, but generally you should be consistent with common practice in the area. Each figure or table must be numbered and labelled and must be referred to in the text. If you have extensive and detailed data, it should be placed in an appendix.

It is important to comment on the data in an appropriate way - to see them from the viewpoint of the theory or previous research, to discuss the factors that could limit your data, where possible omission/errors could occur and the reliability of the data. More details about data commentary and activities to practice are given here.

In an ideal case every subsection will start with a short “introduction”, i.e. more general statement, and finish with a short summary or partial conclusion. This not only makes the text readable but also helps (in the last main section – conclusion) to formulate the overall conclusions of MT.

CONCLUSION

Conclusion section of MT not only summarizes the main results, it also discusses, evaluates and interprets them, presents significant findings directly and precisely; states conclusions drawn from the research. In Conclusion section you should be more general, more theoretical, more connected to the practice. Results should be discussed in reference to the research questions or problems that were laid out in the introduction. [3]

BIBLIOGRAPHY (References)

All of the cited, used or mentioned literature and other sources of information must be given here in the proper form, and vice versa, all references must be referred to in the main body of the thesis. At the University ISO 690 is the prescribed standard (even if you can also find different styles, e.g. Chicago or MLA, depending on the area).

Note: Most examiners also look for their own publications if they work in the topic area of the thesis, so list these too. Besides, reading your examiner's papers gives you a clue as to the type of questions they are likely to ask.

LIST OF ABBREVIATIONS/FIGURES/TABLES

Here you list the relevant non-verbal communication you have used in the text – abbreviations, acronyms, graphs, figures, tables.

APPENDICES

Appendices/Appendixes contain any material which would disturb smooth reading of MT but is important to justify the results presented in the thesis. Examples include lists of programs, large tables of data, lengthy mathematical proofs of derivations, extensive calculations, graphs or other material analyzed in the text.

Each appendix has a number and title, and each has to be referred to in the text.

Final comments

All in all - MT shows that you are able to chose o good (yet unsolved) problem and solve it. Before this, the reader must be introduced into the problem. The final part highlights the main knowledge generated in the research, states how the aims given in the Introduction have been used.

The purpose of your MT is to clearly document an original contribution to knowledge. You may develop computer programs or other tools as a means to proving your points, but remember, MT is not about the tool, it is about the contribution to knowledge, so you use the tools to demonstrate that you have found something new.

Note that you must carefully separate everything that **others** did from what **you** did.

The structure of MT at the University is quite rigid, the same as the format, which is given by the template. So, do not try to change the template (!), this would be against the rule. Also, use the template for writing the thesis from the very beginning. If you us a different format and then you try to get the text to the template, you might come across unnecessary problems, which always mean loss of time.

References

[1] http://web.utb.cz/?id=0_0_12_3&lang=cs&type=0.

[2] http://web.utb.cz/en/docs/Rules_study_Examination.pdf

[3] SWALES, J., FEAK, Ch. B. *Academic Writing for Graduate Students*. Ann Arbor : University of Michigan Press, 2004.

[4] http://www1.cuni.cz/~brt/bibref/bibref.html

8. Features of the sections - practice

ACKNOWLEDGEMENTS

Some ideas for writing and examples of acknowledgements can be found on the following webpages :

http://www.educationalwriting.net/resource_center/Thesis/Writing/Thesis_Acknowledgements.htm,

http://www.klausdierks.com/Thesis_Abstract/Thesis/1.htm,
http://herkules.oulu.fi/isbn9514266439/html/f16.html,

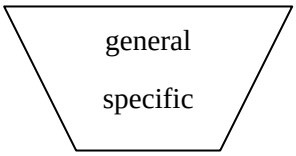
http://hakunaa-matataa.blogspot.com/2009/07/acknowledgement-my-thesis-report.html.

Acknowledgements are very similar for Master and PhD Theses (in the examples you will find both).

9. Introduction of MT

The introduction should indicate the relevance and importance of the analyzed topic to the theory and practice, and also give the reader an overview of the study. The scope of the study should be presented here along with a brief discussion of what the writer expects will be the value of his/her research.

A good way to organize your Introduction is from **general** to **specific**. Graphically it can be presented as



A very good and logical approach to writing (not only) Introduction is presented by Swales. He applies a rhetorical point of view - justifies the research by creating a research space (CARS). In [1] the structure of Introduction is divided into 3 moves showing

what has been done → what has not been done yet → we are going to do it.

Or more precisely, the three moves are characterized in the following way:

Move 1 - Specifying the research territory; here you **can** show how the research area is important or interesting, and you **must** say what has already been found about the topic - on a very general level (details will come in Theory section).

Move 2 - Identifying the gap in the previous research, pointing at contradictions in results or opinions of different previous researchers (getting more and more specific, closer to your topic).

Move 3 - Occupying the free space in the area/niche of research by giving the purpose or goals of your research (specific to only your research).

The Introduction section finishes with problem / purpose / research question / assumptions statement, depending on the topic of your MT. Even if their purpose inside MT is very much the same, they may differ, as further specified in the following. [2]

Problem statement

This is an aspect which usually arises from the literature review. After the parts describing what has been done in the research so far, and what has not been done (what still needs to be researched), you pronounce clearly the problem you are going to deal with in your study. This is very often connected with the purpose statement. Thus you will write **what** and **why** you are going to study. Here you must show your logical thinking, this is where you bring your notion/approach to the problem and justify your research.

To state the problem, you must be sure what is already known about the topic and what is not. The former will be found in literature, the latter should be identified by you. (Actually, it is partly given, maybe on a more general level, by the supervisor who offers the topic.)

Purpose statement

The purpose statement may differ in different types of studies, and the type of study should be indicated here. You can carry out a "descriptive", "relationships", "differences" or combined studies, which will reflect in expressions like *The purpose/objective of this study is to describe/compare/find a relationship between…*

Research questions/Hypotheses

In some areas, often in humanities, the author states research questions or hypotheses, which are to be answered/proved in the thesis. However, in technology this is not common to express explicitly (even if the questions are still in the background), so we are not going to deal with it.

Assumptions

Not all studies include assumptions; they appear in more theoretical theses, e.g. in modelling. (Quite often, however, assumptions are included in Theory.) In the assumptions you show that you realize more complex effects on the results but you are not going to test them in your study. For example *In the polymer behaviour description we suppose Newtonian behaviour….* Or *In the determination of viscosity we supposed that the effect of pressure can be neglected.*

The language that is used for individual purposes can be found here.

References

[1] SWALES, J., FEAK, Ch. B. *Academic Writing for Graduate Students*. Ann Arbor : University of Michigan Press, 2004.
[2] ROBERTS, C. M. *The Dissertation Journey*. Thousand Oaks, California : Corwin Press, 2004.

9. Introduction of MT - practice

The ideas for this part have been taken from Swales. [1]

1. Here are some phrases you can use, without the danger of plagiarizing, to state the importance or relevance of the research area you are dealing with (**Move 1** in Introduction):

   Recently, there has been growing interest in …

   The increasing interest in … has heightened the need for …

   The (*your topic*) has become a favourite topic for …

   The development of … is a classic problem in …

   Knowledge of … has a great importance for …

   The study of … has become an important aspect of …

   Many researchers have recently turned to …

   The relationship between … and … has lately been investigated by a number of researchers.

   Many recent studies have focused on …

   Of particular interest and importance is … (*this sentence includes **inversion**; used to stress a specific feature → do not overuse*).

2. If you want to establish a research area (**Move 2**) by indicating the incompleteness or weaknesses of the previous research, which means you will assess previous research in a negative way. For this you can use different parts of speech and structures which may differ in the strength:

   - **verbs**

     concentrate on
     disregard
     fail to consider
     ignore
     be limited to
     misinterpret
     neglect to consider
     overestimate
     overlook
     be restricted to
     suffer from
     overestimate
     underestimate

   - **adjectives**

     controversial
     incomplete
     questionable
     unconvincing
     unsatisfactory
     inconclusive
     misguided

   - **negative openings**

     However, little information/data has been published on …

little attention has been paid to …

little research has been carried out to explain …

Little is used, as you know, for uncountable nouns. For countables, on the other hand, we use *few*.

However, few studies/investigations have dealt with…

few researchers been published on …

few attempts to elucidate the principle of … have been made.

- **contrastive statement**

  The research has focused rather on … than on …

  Although considerable attention has been paid to …, much less effort has been devoted to …

- **need for further research**

  Thus it would be of interest to find out how …

  The previous findings indicate that the method might nor be effective when applied to …

  It means that further research is needed to explain …

3. In the **last move**, i.e. at the end of Introduction, you can give the purpose of your MT (infinitive of purpose), its content or nature.

   The (main) aim/goal/purpose of this MT is to … (Here *aim* is a noun.)

   The MT aims to explain and assess … (Here *aim* is a verb.)

   The primary focus of this MT is on …

   This MT focuses primarily on …

   In this MT the results of … research are presented.

Reference

[1] SWALES, J., FEAK, Ch. B. *Academic Writing for Graduate Students*. Ann Arbor : University of Michigan Press, 2004.

10. Thesis statement and goals

Thesis statement can be understood as very brief condensation of the analysis or argument which will follow in MT. It can be considered a question you are to answer in your thesis. A well-formulated thesis statement helps you better develop your argument and organize it logically. Formulating a statement means you have to think of different aspects of your research and express it in minimum words. Thesis statement gives the basic idea of your research and is specific for the assignment, e.g. giving the material for which the statement is valid, or the conditions where it holds.

Thesis statement helps you in many ways. It makes you test your ideas by expressing them in one or a few sentences, thus improving their organization and development of your arguments, and from the viewpoint of the reader, it is an indicator of your argument.

How to tell a strong thesis sentence from a weak one? [1]

1. A strong MT takes some sort of stand = shows your conclusion about a subject.
2. A strong MT justifies the findings in discussion, not only states observation. A good strategy is to show that the topic is controversial. The audience will be interested in reading the rest of MT to see how you support your point.
3. A strong MT expresses one main idea or it shows how two ideas are related. (A great many clear and engaging thesis statements contain words like "because," "since," "so," "although," "unless," and "however.")
4. A strong thesis statement is specific - it should show exactly what your paper will be about, and at the same time it will help you keep your MT in a manageable scope.

In different disciplines you can find different terms to refer to the central focus of MT. It can be a research question or a problem you are trying to answer or solve. The statement should not only formulate the question or issue, but also shows that the question is still unanswered or problem unsolved and justify why it is worth dealing with.

The statement must be brief and clear. Use exact wording (precise terminology) and concise language so that the reader understands the main idea and cannot be misled.

Some examples of thesis statement can be found on the Internet.

References

[1] http://www.indiana.edu/~wts/pamphlets/thesis_statement.shtml

[2] http://wiredprof.org/100h/lectures/Thesis-Intros.htm

http://imej.wfu.edu/articles/1999/1/02/demo/tutorial/thesis.html

http://owl.english.purdue.edu/owl/resource/545/01/

http://lesson-plans-materials.suite101.com/article.cfm/writing_effective_thesis_statements_for_essays

http://www.unc.edu/depts/wcweb/handouts/thesis.html

11. Literature review

The theoretical part of MT mostly contains a literature review, so you should know at least basic ideas of this genre. [1]

By definition in Wikipedia "... literature review is a body of text that aims to review the critical points of current knowledge and or methodological approaches on a particular topic. [2] Or, in other words it is a critical analysis of published knowledge through summary, classification, and comparison of previous research studies or other texts [3]. From this definition it is clear that it not just collection of ideas read somewhere else (and the less copying them!). In literature review (LR) you should demonstrate your proficiency in the given area, ability to critically view the present state of your topic area.

If you have carried out at least a small pilot study and are sure that the research of the topic can bring some new knowledge, you can now start very intensive search in the library, both printed and electronic sources, with the aim to find basic literature which will give the background and justify your research. Your supervisor will give you the very basic sources, but further search is up to you. Do not fail to come up with up-to-date literature on the topic.

You are supposed to read a lot (in fact reading is the highest priority at this stage of your research as it will give you foundation for your experimental research), but definitely not every book or paper you have read will be used in LR. Forget the rule "The more, the better", it is not valid here. Giving all the ideas you have come across would mean that you are not able to distinguish the importance and the relevance of ideas.

Before you actually start working in the library, you should identify/specify **keywords**. Finding the right keywords will help you a lot. They will help you find relevant literature just in any database in the library. More details here.

Types of sources for LR

There are basically two types of sources - primary and secondary. The former are original contributions give results obtained in the research, statistics, historical documents etc. and in technology they can be in the form of research papers published in journals, conference proceedings, project reports or others.

Secondary sources, on the other hand, analyze, interpret or discuss primary sources. These can be articles reviewing recent research in the area, but most often they are in the form of books where results of previous research are generalized.

In your LR you should balance both types of sources. Secondary sources will give you more general theoretical background to your research area, primary sources then enable you to describe the state of the art and justify the choice of the topic (*There are still some gaps in the research - I will fill them in my MT*). More about literature sources in Sources.

Use of sources from the Internet

The Internet is an inexhaustible source of information on any topic and even more, it enables you to get the information without even going physically to the library. However, do not rely

only on it and be very careful in choosing the sources. The danger of the web is that anybody can place anything on the Internet, even the most stupid ideas and concepts which, however, you may not be able to distinguish. I do not only mean the manuals how to construct a nuclear bomb; more dangerous for you is inaccurate or misleading information. Thus it is recommended to use only sources which are refereed, i.e. approved by experts from the area, such as the databases provided by the University Library (accessible from computers in the library and study rooms).

The University Library also gives you a chance to make your work easier and faster using appropriate software. [4]

When you have finished the draft of you LR, check it against the following checklist [1]:

- All major points of the topic are covered it the review.
- The same attention is given to all variables.
- The flow of ideas is logical, well organized, and the text is not fragmented (good text flow).
- The approach to the sources is critical and analytical rather than just summarizing.
- The review contains opposing points of view, not only one, and the previous research is commented.
- The content is indicated in Intro and is in accordance with it.
- The LR deals with the purpose statement and research questions, and gives the background.
- Each research question/subtopic is covered with mainly current literature.
- LR is based on academic/scientific sources, not popular magazines or web pages.
- All major sections/chapters are summarized at the end (general - specific – general approach).
- The bibliography contains at least the minimum required sources (specified by the Faculty or supervisor; may differ substantially).
- Majority of sources are from past 5-8 years (depending on the area - fast developing area requires mainly latest literature).
- There is a balance between primary and secondary sources.
- The ideas from literature are paraphrased or summarized (the amount of quotations in technology is minimal).
- Various points of view are combined in the review, i.e. more sources are cited, not only one.
- The citation is in accordance with requirements.

  There are different styles how the used literature sources are referred to. TBU as any other university requires use of a particular citation style, which must be consistent throughout the thesis. For technology it is basically ISO 690 so bear in mind from the very beginning of your work what information about each source you must save for further reference.

If all the answers are “yes”, you can start proofreading of the text, correcting possible mistakes in language (style, grammar, spelling).

Generally, to make your work on MT efficient, it is advisable to

- learn about helpful software (not only that mentioned above but also e.g. for statistical treatment) before you start working on your MT. This can further save you a lot of time and stresses;
- use the prescribed template for MT from the very beginning; later transfer from simple Word document can cause problems;
- bear in mind that computer always crashes when it is least suitable (if it is ever suitable ☺), so save your work regularly not only on the computer disc but also on a flash disc, CD or somewhere else (or send it to your email box in cyberspace). Anything can happen not only with the computer, so it is good to have a back up copy in a different place;
- use only computers with legal software, use virus protection programmes;
- save different versions as you proceed (the document name can include the date, which will enable you to see the order of the version immediately). Sometimes you delete a part of the text as unsuitable, but later you change your mind and want to use the text, so you will find it in one of the previous versions. If you just save one version as it develops, the text will be lost.

You should be sure about this before you actually start writing the literature review.

References

[1] ROBERTS, C. M. *The Dissertation Journey*. Thousand Oaks, California : Corwin Press, 2004.

[2] http://en.wikipedia.org/wiki/Literature_review

[3] http://uwp.duke.edu/wstudio/resources/genres/lit_review.pdf

[4] http://web.knihovna.utb.cz/?id=0_3_8&lang=cs&type=0

[5] http://www1.cuni.cz/~brt/bibref/bibref.html

11. Literature review - practice

Keywords – work with databases

A good choice of keywords is the first step in finding relevant literature in databases. If you want to get really relevant sources, learn how to use Boolean operators (AND, OR, NOT) and to use advanced searches.

You will place AND between expressions if you want to have both/all in the same document, OR if you want to broaden the search, NOT if you need to eliminate some expressions. For instance if you topic is *The effect of temperature on the viscosity of polymers*, you can enter:

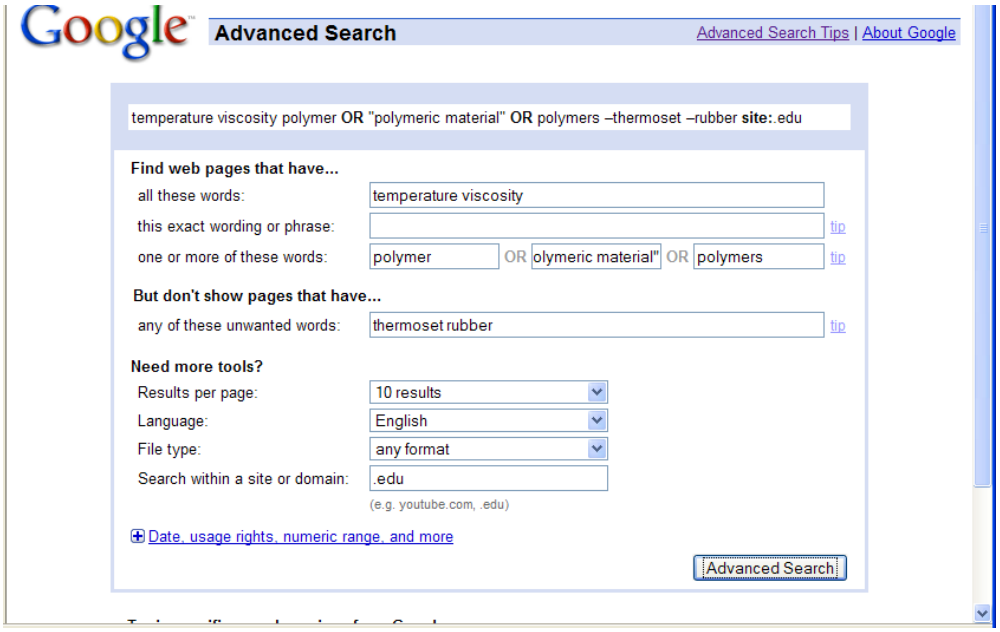
temperature AND viscosity AND polymer OR "polymeric material" OR polymers NOT thermoset NOT rubber.

If you are looking for a more-word term, you will place it in inverted commas (*"polymeric material"*)

Alternatively you can use search engines like Google, Alta Vista, Yahoo, which offer these functions in individual lines. As you can see in the example of Google below, you can even choose the language or the domain (e.g. .edu) which can be considered reliable. A similar system can also be found in some other cases.

Truncation is another way how to find relevant sources. If you are not sure about the exact form of the word, you can use truncation symbols, such as *, %, $ or others, depending on the database, which replaces part of the expression. For instance search for *polym* material* will result in *polymer material, polymeric material,* but also *polymer composite material, polymer hybrid material* etc.

This is what the screen looks like in Google:



Reporting verbs in literature review

As in the literature review you are reporting to somebody else's idea, you must indicate this. The verbs that are used for the purpose follow [1]:

add	affirm	agree	argue
assert	believe	challenge	claim
claim	describe	disagree	dismiss
dispute	doubt	explain	identify
indicate	maintain	observe	point out
present	propose	question	recommend
report	say	state	suggest
support	think	urge	

Tenses in literature review

The use of tenses in literature review is quite flexible and depends on the context. The following table will give you some clues which should help you decide in the choice.

Tense	*Reason for choice*
present simple	general facts reference to current state of knowledge previous findings accepted as facts
present perfect	reference to general area of investigation reference to several studies on the topic general statement about previous research
past simple	reference to a single study reference to a specific piece of research

A rule of thumb: The more general statement, the "more present" tense.

Variation in reviewing literature

To make the text readable you cannot use the same structures, it would be boring. On the contrary, variation of language means is appreciated.

On the following example from Swales [2] you can see how boring the text is if the sentences have the same structure.

The Origins of the First Scientific Articles

[1]The first scientific journal was started in London in 1665. [2]Obviously, the first scientific articles had no direct models to build on, and several scholars have discussed possible influences. [3]Ard (1983) suggests that the first articles developed from the scholarly letters that scientists were accustomed to sending to each other. [4]Sutherland (1986) showed that early articles were also influenced by the newspaper reports of that time. [5]Paradis (1987) described the influence of the philosophical essay. [6]Shapin (1984) claimed that the scientific books of Robert Boyle were another model. [7]Finally, Bazerman (1988) argued that discussion among the scientists themselves made its own contribution to the emergence of the scientific article.

Here, many sentences start with the name, which is followed by a reference verb in the past tense. You can improve the style using different structures, e.g.

According to Sutherland ....

A different viewpoint is presented by Paradis, who ..

Shapin, on the other hand, ...

Linguistic strategies for commenting on previous research [1]

Strategy	*Function*	*Example*
Hedges	The author does not want be directly connected to the statement	may/might/could possible/perhaps/probably
Boosters	The author is sure about the claim	in fact/definitely/certainly/ surely with no doubt
Attitude markers	The author expresses his/her attitude	unfortunately/surprisingly/ unexpectedly
Engagement markers	To build a relationship with the audience	you can see/consider/note that
Self-mentions	The author explicitly referred to	we/our

References

[1] PALTRIDGE, B., STARFIELD, S. *Thesis and Dissertatioin Writing in a Second Language*. Routledge. 2008.

[2] SWALES, J., FEAK, Ch. B. *Academic Writing for Graduate Students*. Ann Arbor : University of Michigan Press, 2004.

12. **Methodology** (Part of Analysis)

This part of MT was briefly characterized in Features of sections; here we are going to develop and specify the basic ideas.

As said in the introduction to this text, the purpose of the Guide is not to you in your research, it is the supervisor's role, but still some ides may be useful for you to get an overview.

Methodology

You should be sure from the beginning what methods you are going to use. First, you must be familiar with the methods, and second, you must have the equipment for the measurements. Methods can be understood as the links between the existing and new information, between theory and practice. [1]

Commonly, two types of methods are distinguished - quantitative and qualitative. Quantitative research is based on scientific method, its aim is to be as objective as possible, and is often based on measurable values (and statistics). Conclusions are then drawn from the analysis of the measured data. [2]

Qualitative research is often based on subjective information, which is not given as a numeric value (e.g. opinions of population on an issue). These will be described in words rather than in numbers, so it cannot be statistically treated.

In practice, the research is often focused on one end of the scale or the other (qualitative x quantitative). For technical areas the research is mostly quantitative, in humanities it may be also qualitative. However, the exact methodology will depend on the topic and research area.

In MT the methodology part may include:

a) research design - type of research and appropriateness to your study;

b) methods applied in the study;

c) materials tested or otherwise used in the research;

d) instrumentation;

e) characterization of human sample or participation;

f) data collection procedures - how/where/when data was collected (if relevant to the study, e.g. for human sample);

g) data analysis - how data was reported/displayed, validity and reliability of data, methods for data analysis (statistics) and rationale for their use;

h) limitations of the methodology.

Ad a) The **research design** outlines how you will prove your thesis statement. Your research design (and methodology) should enable to gather and analyse data in an appropriate way, and it should ensure that your results are correct and acceptable by the academic community. The theories, concepts and approaches which you have presented in the literature review are applied here. Your supervisor will surely help you and recommend a suitable procedure of the research.

Ad b) **Methods** used in your research will be given here in detail, including conditions of experiments (temperature, pressure, voltage or current, heating rate or any other conditions relevant to the experiment), variables measured (physical quantities, people's answers etc.) and if relevant (properties of non-homogeneous materials) also the method of sampling.

In the area of information technology this part presents a full description of implementation details, it can also include flow charts, design documents or state diagrams. If the amount of information is too high, it is given in an appendix. If you are producing software, this section also describes the tests and experiments used to verify it.

When the research topic is a very new, still without established methodology, the recommended way is to start with collection of some pilot/exploratory data and use it for the development of more complex methodology. Then, in your MT you will give details on how an initial set of exploratory data was collected and processed, and then you will describe the developed methodology. The most important advisor also in this aspect, however, must be your supervisor.

From the viewpoint of language, for process description, which methodology actually is, you will mostly use the passive voice because you concentrate on the process, the doer here is not important.

Ad c) **Materials.** This subsection is more relevant to chemistry and materials or food technology than information technology, even if also here it can be found since the scope of the topics is broad.

Here you will specify all special chemicals you used in your research and are not commonly found in laboratories. It means, you will not include beakers, distilled water, centrifuges and other similar equipment, unless it is important for the results (e.g. very efficient centrifuges). In some cases it is also important to distinguish the brand of material and the supplier since materials from different suppliers may differ in properties (level of branching in polymers and consequent elongation viscosity). When using solutions, you should give concentrations, solvents and pH, if relevant. Materials may be reported in a separate paragraph or identified in the description of the procedure. [3]

Ad d) **Instrumentation** includes description or at least the principle of instruments used in your study and justification why it is appropriate to your topic research. The principle of the measuring method indicates whether the chosen instrument is suitable for the purpose, whether it really measures the values you want to determine, or whether there are some factors which can substantially affect the data obtained, thus making it unreliable.

Here you will depict both laboratory and field equipment, as relevant.

Ad e) **Characterization of human sample or participation.** This is relevant to the cases where a sample of people is tested, e.g. measurement of the foot size among people. In this part you should specify the size of population/sample, describe respondents and where they were from, why they were chosen (criteria of selection), type of sampling used and the sampling procedure etc., as relevant to your topic.

Ad f) **Data collection procedure** is mostly used for, but not limited to, human samples. It should say how, where and when the data was collected, if these factors might have influenced the results. Of course, you are not going to write that you were measuring viscosity on Friday morning, as the results would be the same, under the corresponding conditions, any other time.

Ad g) **Data analysis** includes the information on validity and reliability of data, methods for data analysis (statistics) and rationale for their use. It is also important to give the number of experiments, i.e. how many values were taken into statistics. Some more information on statistical treatment can be found on the web [4].

Ad h) **Limitations of the methodology** is important in cases where there are more factors influencing the properties/behaviour of the sample and you only take some of them into account. Stating limitations of the methodology you show that you realize there are also other effects but for some reasons (too complex calculations, time demanding measurements) you cannot cover up all of them.

From the viewpoint of **language,** most often used in this section are past tense and passive voice. The former is applied because the methods section describes a specific set of events in the past, constrained by specific circumstances, the latter is used since you want to stress the process. More details here.

References

[1] ROBERTS, C. M. *The Dissertation Journey*. Thousand Oaks, California : Corwin Press, 2004.

[2] http://www.erm.ecs.soton.ac.uk/theme3/index.html

[3] http://www.ruf.rice.edu/~bioslabs/tools/report/reportform.html

[4] http://www.docstoc.com/docs/2971421/Statistical-Treatment-of-Data, http://www.math.uio.no/avdc/kurs/STK4900/pensum/kompendium.pdf

12. Methodology - practice

Passive voice

Reasons to use the passive voice:

- The agent (doer) of the action is unimportant.
- The agent is unknown.
- The agent is common knowledge, and mentioning it would be redundant.
- The writer desires to control focus of sentence - to emphasize the agent (after *by*).

However, sometimes it is better to use the **active voice.** It is shorter, more direct and less awkward, and clearly states relationship between the subject and action.

Compare

The waiter dropped the tray of food. (Active**)**

The tray of food was dropped by the waiter. (Passive)

Or

Your request for funding has been denied by the review committee. (Passive)

The review committee denied your request for funding. (Active**)**

Many exercises to practice passive voice can be found on the web, e.g.

http://www.ego4u.com/en/cram-up/tests/hadrians-wall

http://www.glohima.com/BACKUPACTIVITIES/GRAMMAR/MISCELLANEOUS/ThePassive.htm

In the description of processes, two basic types can be distinguished: natural and artificial. In the former the active voice is used, while in the latter the passive voice prevails. Here are examples:

Fermentation

Fermentation is a natural process through which fruit sugar changes into alcohol. Every year in autumn sedulous Moravian people gather varied kinds of fruit and fill it into barrels. In barrels, fruit peels slowly crack and this way fruit juice can flow out. The result of this process is a mash consisted of solid and liquid fruit products and, naturally, living organisms called yeasts. These small organisms feed on fruit sugar contained in fruit juice. As a digestion result, they produce alcohol, mostly ethanol. Then, Moravian people are very cheerful because alcohol helps them to survive severe winter.

Flow-induced Crystallization

Flow-induced crystallization is a process leading to self-reinforcement of polymers. The whole process can be divided into several steps: Firstly, polymer must be

melted; for this purpose, the conventional single screw extruder can be used. Then, polymer melt is led to gear pump, which is used to raise pressure in the melt. Finally, pressed melt flows through the converging die. In this section, polymer chains are oriented by the help of accelerated flow and the forming supermolecular structure is fixed by cooling. The final product, for example rod, has much better tensile properties than the article prepared by convectional extrusion.

(Students´ work)

13. **Results** (Part of Analysis)

Results (and Discussion) section gives the data and results (statistically treated) in a logical and systematic way. In general, there are two types of data. The first type, obtained during the empirical study, is called primary/empirical data while the other, i.e. the data that is statistically grouped (averages, standard deviations, correlations etc.) is called secondary data.

Before you start treatment of a complex set of data, discuss the processing of the first (small) set with your supervisor. This can save you valuable time and effort.

You should be sure in what form to present data (graphs, tables), which often depends on the customs of the research area. However, what is common to both, each table or graph must be numbered and labelled and must be referred to in the text. If you do not write about the figure, why is it included?! As a rule, first you write about the graph/table in the text and then you present it. There might be some cases when you do it vice versa - if the layout requires (there would be o large free space on the page).

If you have extensive and detailed data, it should be placed in an appendix. This will give the reader a possibility to see what you measured, but will not break the main line of ideas in the text itself. If you get your results in electronic form, always keep the original version unchanged and work with a copy; here you can use colour markers or any other indicator which will make the results more understandable. [1]

It is important to comment on the data in an appropriate way - to see them from the viewpoint of the theory or previous research, to discuss the factors that could limit your data, where possible omission/errors could occur and how reliable the data is. More details about data commentary and activities to practice are given here.

The values in the tables/graphs should be statistically treated, and the nonverbal communication should accompany (but not duplicate!) the text. It means that not all information given in graphs or tables will be described in the text; only most important results, general trends or irregularities will be commented on in the text.

Here you must also be very cautious about the strength of claim, or in other words, how sure you are about the statement you are presenting. There are a number of ways how you can "soften" the claim (say that it is not 100% sure). Mode details here.

Checklist for presentation of findings

When you have finished the draft of Results section, go through it and check against the list of questions [1]:

- Are the findings clearly presented?
- Are the graphs and tables well organized and easy to understand?
- Are they presented in the required format?
- Are only the most important results presented?
- Are they commented on in the text?
- Are the figures and tables effectively and logically integrated in the text?
- Are the findings reported objectively and without bias or preferences?

- Is it clear from the comments in the text what are the results and what are speculations or evaluations?
- Are the presented results in accordance with the research question(s)/statement(s)?

Reference

[1] ROBERTS, C. M. *The Dissertation Journey*. Thousand Oaks, California : Corwin Press, 2004.

13. Results – examples, practice

Data commentary

Structure of data commentary

To produce good commentary on the data in graphs/tables, it is reliable to follow this structure: [1]

1. Location and summary statement - *where* and *what* generally,
2. Highlighting the most important results - *what* concretely,
3. Discussion of implications, exceptions, problems etc. - *what it means*.

An instructive example is presented again in [1]

Location + indicative summary

Table 5 shows the most common modes of infection for U.S. businesses. As can be seen, in the majority — Linking as clause
of cases, the source of viral infection can be detected, — Highlight 1
with disks being brought to the workplace from home being by far the most significant. — Highlight 2
However, it is alarming to note that the source of nearly 30% of viral infections cannot be determined. While it may be possible to eliminate home-to-workplace infection by requiring computer users to run antiviral software on diskettes brought from home, businesses are still vulnerable to major data loss, especially from unidentifiable sources of infection. — Implications

You can see that **location and summary** is followed by *as* – clause, which refers directly to the graph/table. It is a specific type of clause, without a subject.

As can be seen, ..

As indicated by the graph, ...

Highlighting results

Verbs for reference to graphs and tables

If you are refering to figures or other graphical communication, you can use various verbs. Take into account the aspect if you just indicate generally what the graph/table is about, oor if you are highlighting results. Each of requires specific verbs.

Table X _____ the results of the first experiment. summary

Figure X _____ that the main cause of the time delay may be ……. highlighting

Which of these verbs can be used to complete the sentences? If you are not sure, consult a good dictionary, where you will find examples of the use in sentences.

show, provide, give, present, summarize, illustrate, reveal, display, demonstrate, indicate, suggest

Qualifications and strength of claim

When commenting on data, you must give only statemnets which you are able to justify. It means that you must express the degree of certainity or probability, e.g. 100%, 50%, 10%.

There are various language means [1]:

a) probability - using modal verbs with decreasing level of certainity (*will, may/can, might/could*)
   - using adverbs (*It is certain/probable/likely/possible/unlikely/highly improbable that…*)
   - using adjectives (*There is a strong/good/definite/slight/remote possibility that …*)

b) distance - using verbs *seem/appear* or even (less probable) *would appear*.

c) softening data - limiting it with expressions *at most temperatures, … on the limited data available, in the view of some experts, according to this preliminary study, based on iformal observations, etc.*

d) qualifying the subject - *a majority, some of,…*

e) giving exceptions - *with the exception of …, apart from …, except for …*

f) generalization - verb *tend*

g) weaker verbs - instead of

cause	you can say	*contribute to*
establish		*indicate*
show		*suggest*
undermine		*question*
validate		*support*

Of course, you can combine individual means but be sure the sentence still contains a message. Statement

> *According to some researchers there is a slight possibility that under certain circumstances in some polymers the polluted environment might contribute to their degradation.*

actually says nothing. So do not exaggerate.

The last part of data commentary gives

- explanations, implications,
- unexpected/surprising results,
- possible further research.

Of course, not always all three parts are present.

If some problems appear, you have at least speculate about reasons:

> *The discrepancy can be attributed to …*
>
> *The lack of statistical significance is probably a consequence of …*

The difference between expected and obtained results may be due to …

Expressions and phrases used for graph description can be found and practiced on the web, e.g.

http://www.writefix.com/graphs/usqassign1/vocab.htm

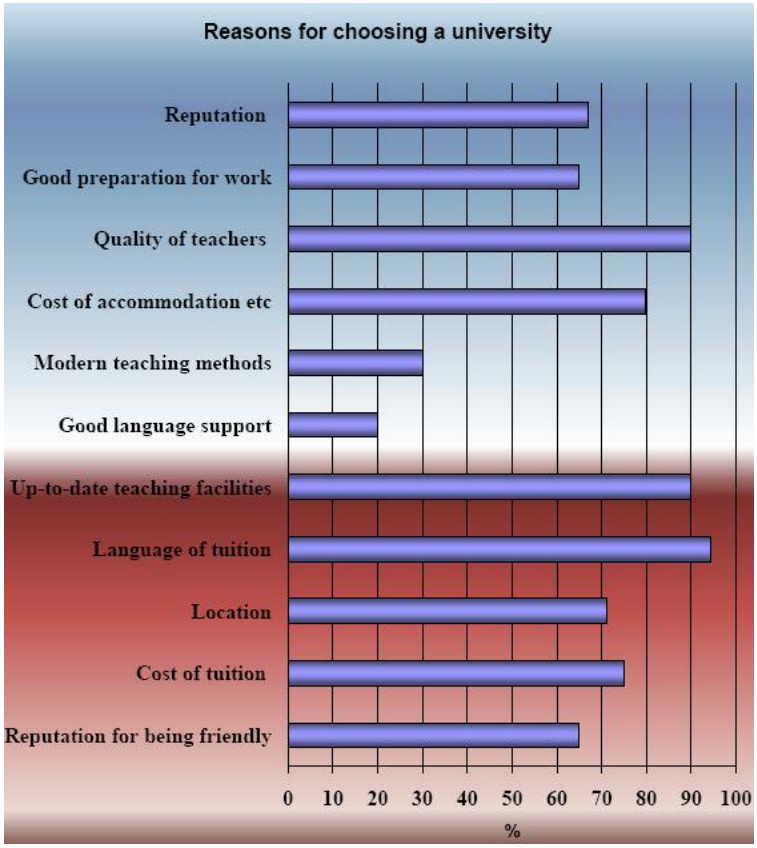
http://www.eclecticenglish.com/applets/Graphs.html

http://www.dis.uniroma1.it/~degiacom/didattica/erasmus/abermann/rom_08_01_diagram_final.pdf

In the following exercise you can practise **phrases used in data commentary** [2]:

Reasons for choosing a university

Look at the chart below and add the phrases A-O in the appropriate spaces in the sentences 1-15, which follow.



List of phrases

A only 30 percent selected

B reason behind students choosing

C as opposed to 75 percent

D can be divided

E was carried out

F was five percent more than

G more students quoted

H is given as

I	is	**L**	at 95%, 90% and 90% respectively
J	with approximately	**M**	reasons why
K	compared with modern teaching methods	**N**	which influences students
		O	bottom

1 The chart shows 11 _____ first year students from overseas chose a particular university.

2 Good language support comes _____ at 20 percent.

3 Language of tuition is top of the survey _____ 95%.

4 At 95 percent of the sample, Language of tuition is the main _____ a university.

5 The survey of 1,000 first year overseas students _____ at universities in the UK.

6 Good language support at 20% is the factor _____ least when making a choice about which university to attend.

7 Language of tuition _____ a reason by nearly five times as many students as Good language support, at 95% and 20% respectively.

8 The top three reasons are Language of tuition, Quality of teachers, Up-to-date teaching facilities, _____.

9 According to the graph, the main reason _____ the language of tuition.

10 The various factors _____ into two groups, namely those related to teaching and non-teaching related.

11 While around 95 percent of the students gave the language of tuition as the main reason for choosing a university, _____ modern teaching methods.

12 The cost of accommodation at 80 percent _____ the cost of tuition at around 75 percent.

13 Eighty percent of the sample mentioned the cost of accommodation as a reason for choosing a university _____ for the cost of tuition.

14 _____ the cost of accommodation and the cost of tuition than Location at 80% and 75% respectively.

15 Good language support was stated by only 20 percent of the sample as a reason for choosing a university _____ at 30 percent.

References

[1] SWALES, J., FEAK, Ch. B. *Academic Writing for Graduate Students*. Ann Arbor : University of Michigan Press, 2004.

[2]http://jazyky.feld.cvut.cz/vyuka/A/04OA/MATERIALY/Week%207_Computing%20Sustainability.pdf

14. Conclusion

Conclusion section is one of the most important pars of your MT. Not everybody reads the whole TM carefully, but be sure that they will read Conclusion.

Conclusion section is derived from the material presented in the main body of MT (theoretical and experimental parts). It not only summarizes the main results but put them in context of the research or practice, i.e. sees the results "from distance". Not what the results are, but what they mean. In Conclusion section you should be more general, more abstract, more theoretical, more connected to the practice. You should show how the goal of the thesis has been met, the research question answered or problem solved. In brief, join Introduction to the Conclusion, or close the circle. It means in Intro you state your goals and in Conclusion you say how you have reached them. In this section, no new ideas, findings or analyses are presented. Here you write what principal contributions you have made, on the one hand, and on the other hand, you indicate that you are aware of the limitations of your research. In some cases it is suitable to suggest possible future research, i.e. what problems still remain and how they can be dealt with (though by somebody else).

In Conclusion you should (at the same time) highlight the **strengths** of the study and its **weaknesses** (to show that you realize the limited scope or consequences of the research). First you consolidate the research space (positive evaluation of the importance, originality and advantages of your study - on a general level), then you indicate limitations of the research and finally, if applicable, you suggest possible further research. [1]

The sequence of your conclusions does not have to correspond to the sequence of ideas presented in the text before, on the contrary, it should highlight the results and group them logically.

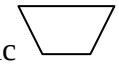
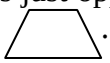
Opening Conclusion section

Conclusion section can be opened in different ways. You can start with discussion of the literature, general conclusion or a summary, you can remind the reader of the original purpose of the study, you can refer back to the theory, discuss the methodology, or you can even start with the discussion of limitations of the research. [1] The basic criterion for your decision is the **distinctive feature** of your study, i.e. its **novelty** (what was better in your study than in the previous ones, what new facts you have found, etc.).

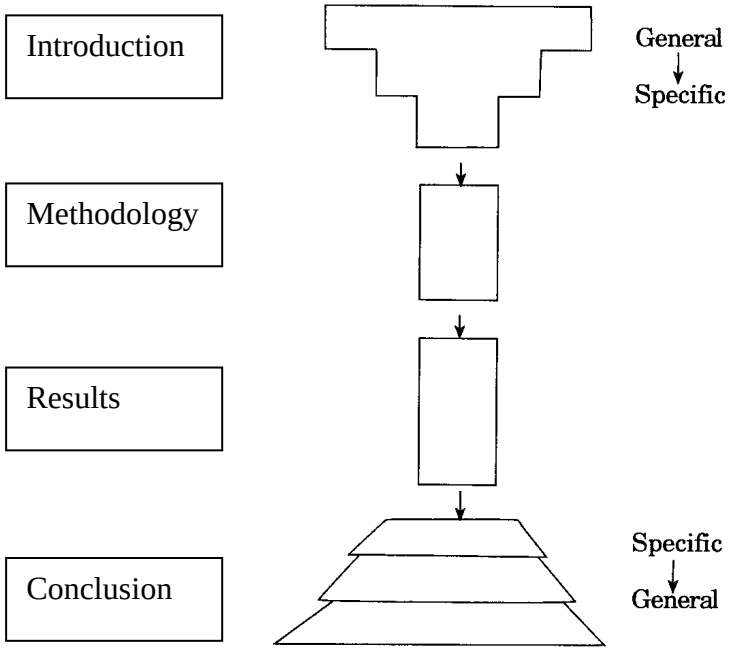
Limitations in Conclusion section

Basically, limitations can be seen from two points of view: research scope and validity of conclusions from the results. The former says how complex your research was, in the latter you state to what scale the results can be applied.

Sentence structures and other language means for these parts of Conclusions can be found here.

As you remember, in Introduction the ideas go from general to specific  , in Conclusion the process is just opposite – from specific (your results) to general (what the results mean in the context)  .

Thus, the overall shape of your thesis should be (as already presented in Introduction) [1]



Note: As you may have noticed, we use in this text ”conclusion” in two meanings, one means the section, the other stands for consequences of the results. So, don’t be confused.

Reference

[1] SWALES, J., FEAK, Ch. B. *Academic Writing for Graduate Students*. Ann Arbor : University of Michigan Press, 2004.

14. Conclusions - examples, practice

Conclusion section must be more general, more abstract, more theoretical, more connected to the practice.

For **generalization** you can use the following expressions:

- Generally
- In general
- On the whole
- With the exception of …
- Overall

Limitations

To indicate the limited validity of the research, you can choose some of these structures [1]:

1. Limitations in the scope of research
   > The research has concentrated on …
   > The limitations of our research are apparent: …
   > It should be noted that only … has been examined in the research.
   > In this study the … has not been taken into account.
   > The results of this study are restricted to …
2. Limitation in conclusions
   > Unfortunately, from the data obtained we are not able to determine …
   > However, the findings do not imply ….
   > The small number of samples means that we are not able to predict …
   > The results of this research cannot be taken as evidence for …

Stressing positives

When you are giving limitations of the research, it is good to place the phrase at the beginning of the sentence and to finish the sentence with positives (the information at the end is "heavier"). In other words, if you start a sentence with negative aspects and finish with positives, the idea sounds better than vice versa.

- Despite the preliminary character of the research, the results indicate …
- Even if only exploratory, our study has shown …
- Notwithstanding its limitations, the research well demonstrates …

Reference

[1] SWALES, J., FEAK, Ch. B. *Academic Writing for Graduate Students*. Ann Arbor : University of Michigan Press, 2004.

15. Abstract, keywords, acknowledgements

Abstract

An abstract is a summary of a body of information. There are different kinds of abstracts; in technical writing most often used are descriptive and informative abstracts.

The ***descriptive abstract*** provides a description of the report's main topic and purpose as well as an overview of its contents. In this abstract you don't summarise any of the facts or conclusions of the report, or you can imagine it as major first-level headings rewritten in paragraph format.

The ***informative abstract*** provides information from the body of the report, the key facts and conclusions from every major section. It gives the reader a brief preview of the study and typically it includes:

B – some *background information*

P - *purpose* of the study and its *scope*

M – *methodology* used in the study

R - the most important *results* of the study

C – *conclusion* or *recommendation* based on the results of the research.

The ***reduced abstract*** typically focuses on only two or three elements, with the emphasis placed on the *results* of the study. *Purpose* and *methods* are presented first (background information is not included). Then the most important results are summarized, and finally, conclusions and recommendations may be included in one or two sentences. So the structure may be like this:

P+M – purpose and method

R – results

C – conclusions and recommendations (optional).

Abstracts are substantially shorter than the original report, which means that the information is very dense and compact. Sentences are longer and are crammed with information, introductory explanations are omitted as well as source citations.

You can see some examples of abstracts here.

Keywords

The main purpose of keywords is to complement the title to help the reader find information on the required topic in databases. (The search tools often join title, abstract and keywords into one item.)

There are some **rules for writing** useful **keywords**:

1. Use simple, specific noun phrases.
2. Do not use too common expressions (general terms result in a large number of entries).
3. Avoid unnecessary prepositions (instead of *quality of data* use *data quality*).

4. Do not use acronyms unless they are commonly used in the area. Remember that the same acronym can have different meanings.
5. Spell out Greek letters; do not use mathematical symbols (most search tools cannot process them).
6. Avoid using names of people (unless they are part of well established terminology).
7. Indicate the area of application.
8. Do not introduce new terminology in this section. When a new term is coined, it must fist appear many times in the text, and only then it can appear in keywords.

Acknowledgements

Acknowledgements is an integral part of MT. It can contain various elements:

- Financial support
- Thanks
- Disclaimers (E.g. *None, however, is responsible for the remaining errors*.)

Examples and inspiration for your Acknowledgements can be found here.

15. Abstract - practice

Identify the parts in the abstracts attached (background, purpose, methodology, results, conclusion). Sentences are numbered, the solution is here.

Example 1: INFORMATION TECHNOLOGIES

[1]Quick and efficient evaluation of some hand filled-in questionnaires or tests is requested in many areas of present life. [2]The aim of the present work was to develop a PC program equipment for evaluation of filled-in questionnaires, which are scanned into digital form as two colour bitmap files. [3]The questionnaire is meant as the set of questions where respondent specifies one answer to each question. [4]Individual respondents are identified by their unique identification number, which is entered as a row of numerals. [5]The answers to questions are entered by cross cheeking boxes corresponding with the answer. [6]The final computer program was designed for Windows environment because this is the most common operating system. [7]It consists of three main parts, which are incorporated into one executable file: the creation of the form, the evaluation of filled in tests and the user correction of problems. [8]The first part is a graphical editor where the user can create an appropriate form, save it to the disk and then print it out. [9]The second part takes filled in scanned tests as an input and recognizes respondent identification number and individual answers. [10]The recognition of the handwritten digits is the most sophisticated part of the program - it uses elastic models of the digits and deforms these models to fit the bitmap image of a digit as much as possible. [11]The last part allows user to correct some problems which can occur during evaluation (e.g. unrecognised digit in respondent identification number) and then produces text files as an output. [12]These files are suitable for import to other programs e.g. Excel or Word.

Example 2: POLYMER PROCESSING

[1]Compounds highly filled with hard-metal carbide powder are used in Metal Injection Moulding (MIM) technology for production of metal parts. [2]Flow characteristics of these compounds strongly influence the final properties of the products. [3]The paper presents rheological study which should clarify temperature dependent behaviour of hard-metal carbide powder compounds. [4]The multicomponent polymer binder consisting of polyethylene, paraffin wax and ethylene-butyl acrylate block copolymer and a set of compounds containing 40 - 55 vol.% of the metal powder were prepared on a laboratory kneader by melt mixing at 180 °C. [5]The rheological measurements were carried out on capillary rheometer at constant piston speed in the temperature range of 140 °C to 200 °C. [6]The MIM compounds were observed to be strongly temperature dependent. [7]Compounds filled with 45 vol.% carbide powder and higher exhibited pressure oscillations. [8]Increasing temperature caused an earlier onset of unstable flow. [9]Two different temperature dependencies of the pressure oscillation amplitude were observed. [10]The amplitudes increased with growing temperature for the compounds filled with 50 vol.% of carbide powder; however, it decreased for the compounds containing 55 vol.% filler.

Language means in abstracts (enable to express ideas in brief, stress the results, the role of the author is suppressed) can be divided into two basic types – structures and vocabulary.

a) Structure:

passive voice	compound adjectives/nouns
infinitive of purpose	nominalisation
impersonal structures	participles
apposition clauses	complex sentences

To make the sentence shorter, you can combine several nouns, i.e. to create noun **compounds.**

Example: *the rates of deaths cause by cancer of lung* can be shortened into *lung cancer death rates.*

Practice **A. Shorten** the following expressions:

1. *A program of research into cystic fibrosis =*
2. *Junctions made of polymer semiconductors =*
3. *The control of costs of building projects =*
4. *A screw jack operated by a machine =*

B. Now, vice versa, **decode** the following expressions:

1. *technical assistance programmes =*
2. *roadside breath-testing checks =*
3. *major power station contracts =*
4. *a porous stone breakwater =*

Solution

The abstract can contain a phrase indicating either the **content** or the **purpose** of the study. Among the sentence parts below identify both types. [1] Then choose 2 of each group and complete the sentences, i.e. write sentences which you can use in your MT:

1. The aim of the present thesis is to give...
2. This thesis reports on the results obtained ...
3. In this thesis we give preliminary results for...
4. The main purpose of the experiments reported in this thesis was to ...
5. This study was designed to evaluate ...
6. The present thesis extends the use of the last model by ....
7. The primary focus of this thesis is on ... ***Solution***

b) Vocabulary (verbs) in abstracts:

report	argue
show	investigate
indicate	analyse
compared with	based on
exposed to	. . . . .

Sample acknowledgements

a) This work would not have been possible without the financial support of (*name of sponsor*). I am especially indebted to (*name of person*), Chairman of the ....., who has been supportive of my career goals and who worked actively to provide me with the protected academic time to pursue those goals.

b) I am grateful to all of those with whom I have had the pleasure to work during this project. Each of the members of ..... has provided me extensive personal and professional guidance and taught me a great deal about both scientific research and life in general. I would especially like to thank (*person*). As my teacher and supervisor, he has taught me more than I could ever give him credit for here. He has shown me, by his example, what a good scientist (and person) should be.

c) This dissertation could not have been written without ..., who not only served as my supervisor but also encouraged and challenged me throughout my academic program. He and the other faculty members, ..., patiently guided me through the study and research process, never accepting less than my best efforts. I thank them all.

d) Thanks are due first to my supervisor, ..., for his great insights, perspectives, guidance and sense of humour. My sincere thanks go to the ..... for helping in various ways to clarify the things related to my academic works in time with excellent cooperation and guidance. Sincere gratitude is also extended to the people who ..... The author extends sincere gratitude to his scholarship donors, Ministry of Education ....., , for providing me the scholarships and research grants. Lastly, I should thank many individuals, friends and colleagues who have not been mentioned here personally in making this educational process a success. May be I could not have made it without your supports.

e) Nobody has been more important to me in the pursuit of this project than the members of my family. I would like to thank my parents, whose love and guidance are with me in whatever pursue. Most importantly, I wish to thank my loving and supportive wife, ..., and my three wonderful children, ..., who provide unending inspiration. :-))

Solutions:

Abstracts – parts

Example 1: INFORMATION TECHNOLOGIES: 1 -background, 2-5 - purpose, 6 -methodology, 7-11 - results, 12 - conclusion

Example 2: POLYMER PROCESSING: 1,2 - background, 3 - purpose, 4,5 - methodology, 6-10 - results, conclusion is missing

Content and purpose in abstracts

Content indicated in sentences 2, 3, 6, 7; purpose given in sentences 1, 4, 5.

Compounds

A.

1. A cystic fibrosis research program
2. polymer semiconductor junctions
3. building project costs control
4. A machine operated screw jack

B.

1. programmes of technical assistance

2. checks at which breath (of drivers) is tested

3. contracts concluded to build major stations producing power

4. structures build of porous stone to break water (at the see or rivers)

Reference

[1] SWALES, J., FEAK, Ch. B. *Academic Writing for Graduate Students*. Ann Arbor : University of Michigan Press, 2004.

16. Style and language

Academic style

MT must be written in academic style, which is a reflection of precise and logic thinking. It must be clear, direct, the same as your thinking (not only) during the work on you MT. This requires to master basic writing skills - construction of grammatically correct sentences with good structure and appropriate academic vocabulary, creating good text flow, and basically staying focused, eliminating deadwood (i.e. needless) words. [1]

When you writing, first deal with ideas and arguments and only then with words. Logical flow of ideas and strong argumentation is most important.

The common mistakes in argumentation are following:

- Your argument is not supported with evidence, so develop or analyze it.
- The cause and effect is not expressed clearly; do not hide it in many words and digressions.
- The argument does not make sense. You may have made generalizations which are not supported by the results, made claims beyond the evidence or did not consider the research with opposite outcomes.
- If there are serious exceptions, insufficient or partial evidence, strong disagreements, it must reflect in discussion. Show that you know about the problems (more in Results part).

Misunderstanding may also be caused by poor grammar and sentence structure, or incorrect word choice. So brush up your English, if you are not sure, consult a good explanatory (monolingual) dictionary. The more you do it, the more self-confident you will become after some time.

Inexcusable are spelling mistakes (unfortunately often appearing in MT). Use the spell-checker, which is a standard part of Microsoft Word. It will underline a word that is not in the dictionary incorporated in the program; however, it does not mean that the expression does not exist. Very specific terminology from various areas is not included, but if the word is underlined, you know that you should check it carefully. MS Word also enables to add the specific expressions into the dictionary in your PC.

One thing that no spell-check will solve for you is homophones, i.e. words which sound the same but are spelled differently (two - too, see - sea, for - four, eyes - ice, etc.). Because both/all versions do exist in the dictionary, the spell-checker will not help you, so be very careful when proofreading.

C. M. Roberts gives four major areas where mistakes in academic writing appear [1]:

a) organization (e.g. poor division into chapters, ideas not in a logical sequence, lack of consistency);

b) paragraphs (too long or too short paragraphs, missing coherence, not discussing the stated problem adequately etc.);

c) sentence construction (too complicated sentences, many short sentences one after another, missing subject-verb agreement);

d) direct quotations (inappropriate or too excessive quoting);

and I would add

e) unsuitable vocabulary. No matter what topic/area you are writing about, there are some expressions which are very often used in academic environment. You can find them in Appendix.

An important aspect of academic writing is **paragraphing**.

Good professional writing contains features which make it easy for the reader to understand. This is done by creating a clear structure and providing help for the reader to identify the important points. One of the ways of producing good professional writing is to focus on the ***structure*** of a document, which is created by essential building blocks - ***paragraphs***. A good start to becoming a better writer is to understand what a paragraph is.

A paragraph is a collection of ideas that relate to *the same topic;* these ideas - the sentences, are usually organised into a *logical order* which builds on and *supports the main topic* of the paragraph.

A good paragraph has three main features: First, it contains only one topic - this is called *unity*. Secondly, the sentences in the paragraph should be in a logical order and linked together in such a way which clearly shows how they are related to each other - this is *coherence*. The final feature is the presence of a *topic sentence*.

In professional writing the topic sentence is usually the first sentence in the paragraph. Its purpose is to say - "This is the topic I am going to cover in this paragraph." It does this in two ways: it signposts the purpose of the paragraph and then sets the limits for the paragraph. The other sentences in the paragraph develop the main topic by giving examples, adding detail or building on the topic sentence. All of the supporting sentences should be directly related to the topic sentence and this can be tested by checking any of them against it. An example can be found here.

Back to coherence: Think of a paragraph as a family in which all the ideas are related in some ways. A nuclear family of closely related points may be easy to follow, but once you get into the extended family (i.e. mother-in-law of your niece) you need to introduce the newcomer and state the relationship, so that everyone can understand. It can be very exciting to meet a long-lost distant relative, and the same it is good to bring together complex ideas. But do not leave it to the reader to guess connections themselves, they may not be correct. Put the links in your head down on paper.

One feature of academic writing is **directness**. Express the ideas in a brief and exact style, avoid repetition of the same ideas or excessive words. This is one of the aspects how written text differs from spoken. In the former the reader can always get back, re-read the relevant part of the text (several times). In the latter, on the other hand, listeners only have one chance to hear the text, so you must repeat ideas.

Some more rules for writing in academic style are here.

Throughout writing and in the first draft check the text from the viewpoint of style and readability:

- Does your MT bring novel findings?
- Are the arguments clear and supportive?

- Is it interesting and pleasant to read?
- Does it contain all the necessary parts (given in the template)?
- Is it logically divided into chapters/sections?
- Do the headings and subheadings indicate the content of parts?
- Is the writing concise and precise?
- Is the language simple and straightforward?
- Is the text free of grammar and spelling mistakes?

Reference

[1] ROBERTS, C. M. *The Dissertation Journey*. Thousand Oaks, California : Corwin Press, 2004.

16. Style and language - examples, practice

Academic writing - rules

In writing your MT you should follow the rules of academic style. The essentials are [1]:

1. Avoid contractions *it's → it is, they're → they are, won't → will not, didn't → did not, …*
2. Limit the use of "run on" expressions (etc., and so on, and so forth) *Today's people use computers, CD players, robots etc. → Today's people use computers, CD players, robots and other electronic devices.*
3. Never use *for example/for instance/etc.* and *and so on/and so forth/etc.* in one sentence. One or the other, not both. **Modern testing methods include for example spectroscopy, micrography, diffraction scanning calorimetry, thermogravimetry etc. → Modern testing methods include for example spectroscopy, micrography, diffraction scanning calorimetry, thermogravimetry.* or *Modern testing methods include spectroscopy, micrography, diffraction scanning calorimetry, thermogravimetry and others.*
4. Be careful about personal pronouns; avoid using *you,* be very careful of using *I,* limit using *we.* (Compared to the style in this Guide, which is an instructive text and students are addressed with some advice. In MT your audience is a group of people with better knowledge than you have, so you cannot advise them). Instead you can use passive voice or impersonal structures. *You can see the results in Table 5. → The results can be seen in Table 5.* or *Table 5 shows the results of …*
5. Limit/Eliminate the use of direct questions. **How do the materials behave at increased temperatures? → The question is how the materials behave at increased temperatures.*
6. Use "mid-position adverbs". In general language adverbs are placed behind the verb (remember SVOMPT sentence structure), in academic writing they are often inside the verb. *The solution was heated slowly. → The solution was slowly heated.*

Of course, you must bear in mind general rule for writing (subject - verb agreement, countability of nouns, repetition of words, etc.). Here you have the rules hidden in mistakes. Find the mistakes (In each sentence they actually correspond to the idea).

*Selekted Riting Wrules [2]

1. Verbs HAS to agree with their subjects.
2. Prepositions are not words to end sentences with.
3. And don't start a sentence with a conjunction.
4. It is wrong to ever split an infinitive.
5. Avoid clichés like the plague. (They're old hat.)
6. Also, always avoid annoying alliteration.
7. Be more or less specific.
8. Parenthetical remarks (however relevant) are (usually) unnecessary.
9. Also too, never, ever use repetitive redundancies.
10. No sentence fragments.
11. Contractions aren't necessary and shouldn't be used.

12. Foreign words and phrases are not apropos.
13. Do not be redundant; do not use more words than necessary; it's highly superfluous.
14. One should NEVER generalize.
15. Comparisons are as bad as clichés.
16. Eschew ampersands & abbreviations, etc.
17. One-word sentences? Eliminate.
18. Analogies in writing are like feathers on a snake.
19. The passive voice is to be ignored.
20. Eliminate commas, that are, not necessary. Parenthetical words however should be enclosed in commas.
21. Never use a big word when a diminutive one would suffice.
22. Use words correctly, irregardless of how others use them.
23. Understatement is always the absolute best way to put forth earth-shaking ideas.
24. Eliminate quotations. As Ralph Waldo Emerson said, "I hate quotations. Tell me what you know."
25. If you've heard it once, you've heard it a thousand times: Resist hyperbole; not one writer in a million can use it correctly.
26. Puns are for children, not groan readers.
27. Go around the barn at high noon to avoid colloquialisms.
28. Even IF a mixed metaphor sings, it should be derailed.
29. Who needs rhetorical questions in writing?
30. Exaggeration is a billion times worse than understatement.
31. Proofread carefully to see if you any words out.

Eliminating wordiness

The same applies to sentence structure - to express ideas in minimum words, in other words - eliminate wordiness. Some nice examples and practice can be seen here:

http://www.apa-format.biz/Eliminating-Wordiness.html

http://owl.english.purdue.edu/exercises/6/9

http://jdwritingctr.iweb.bsu.edu/WordinesseliminationWordiness.pdf .

Paragraphing

*Here is an **example** of a paragraph in professional writing:*

> There are three main reasons for the decline in sales over the past year. First, the presence of cheap imports, mainly from Korea. Secondly, the transport strike earlier in the year which cost us a whole month's revenue. Lastly, the newspaper article which criticised the company for its lack of environmental concern. All of these things contributed equally to the loss of sales.

Is this a good paragraph?

What is its topic?

Can you identify the *topic sentence?*

Does it contain *unity?*

Does the paragraph have any features of *coherence?*

Coherence in paragraphs can be reached in various ways, first of which are ***linking words***. They express relationships between ideas (addition, contrast, cause and reason, etc.). You surely know a number of them but it often happens that you want to show the same relationship and do not want to use the same expressions. These lists of linking words may help you

http://www.uniklu.ac.at/hlg/sber/downloads/linking_words.pdf

http://www.vivquarry.com/wkshts/linkwd.html,

http://www.english-at-home.com/grammar/linking-words/,

Coherence is also reached by referring to previously mentioned object/subject (it, they, this, such, …). For instance *The thermal properties of the polymer were measured by DSC., **This method** is able to …*

Some examples and practice here:

http://writesite.elearn.usyd.edu.au/m3/m3u5/m3u5s5/m3u5s5_1.htm

http://www.buowl.boun.edu.tr/students/editweb/referencewords.htm

As said before, academic writing should have good **text flow** to make reading pleasant to the audience. Swales gives a nice example:

a. Lasers have found widespread application in medicine. Lasers play an important role in the treatment of eye disease and the prevention of blindness. The eye is ideally suited for laser surgery. Most of the eye tissue is transparent. The frequency and focus of the laser beam can be adjusted according to the absorption of the tissue. The beam "cuts" inside the eye with minimal damage to the surrounding tissue—even the tissue between the laser and the incision. Lasers are effective in treating some causes of blindness. Other treatments are not. The interaction between laser light and eye tissue is not fully understood.

b. Lasers have found widespread application in medicine. For example, they play an important role in the treatment of eye disease and the prevention of blindness. The eye is ideally suited for laser surgery because most of the eye tissue is transparent. Because of this transparency, the frequency and focus of the laser beam can be adjusted according to the absorption of the tissue so that the beam "cuts" inside the eye with minimal damage to the surrounding tissue—even the tissue between the laser and the incision. Lasers are also more effective than other methods in treating some causes of blindness. However, the interaction between laser light and eye tissue is not fully understood.

Miscellaneous

When an **acronym** is used for the first time, write it out and put the acronym in parentheses. For example, *Transmission Control Protocol (TCP) is a reliable connection oriented transport layer protocol and User Datagram Protocol (UDP) is corresponding unreliable connectionless protocol. Many applications use TCP instead of UDP*. It is nice to repeat the whole name of a protocol once in a while.

If you want to become a more skilled writer, on the web you will find a number of good sources, e.g.

OWL Online Writing Lab,

The Elements of Style.

For complex grammar revision helpful websites are

http://www.unc.edu/depts/wcweb/handouts/index.html

http://grammar.ccc.commnet.edu/grammar/

http://www.cgu.edu/pages/999.asp

http://www.powa.org/

A very good source with clear division of individual grammar aspects is

http://owl.english.purdue.edu/exercises/

You can double click or print the exercises.

References

[1] SWALES, J., FEAK, Ch. B. *Academic Writing for Graduate Students*. Ann Arbor : University of Michigan Press, 2004.

[2] http://www.ruf.rice.edu/~bioslabs/tools/report/wrules.html

17. Template, formal features

The rules for formal features of your MT are given (in Czech only) on http://web.utb.cz/cs/docs/smernice_r12_2009.pdf, where you will also find the template. Use it from the very beginning to avoid further problems with copying your text to the template.

The result of your writing must be a professionally looking text which brings something new to the researched topic and where ideas are logically structured and linked together. Thus the content is most important. However, it is always supported (or destroyed) by the style and formal features.

The process of writing - practical tips [1]

1. First you must be sure what you want to say and only then change the ideas into words. Do not just write words as they come to your mind.
2. Do not stop putting your ideas on paper if you cannot find the best possible word. Use any acceptable word, label it and later get back to it a replace.
3. Do not suppose to get a good text on the fist occasion. It is recommended to express the ideas in more versions and then to choose the best of them. Also as the parts of MT develop, you will have to get back to those written at the beginning and modify them.
4. Your supervisor will make you change your drafts. Be happy if you get the response, this is the only way to see your work from different viewpoint or more complexly and thus produce a better text.
5. Leave enough time for revisions - implementation of second thoughts. The process of writing commonly includes rethinking, revising, rewriting, maybe several times.
6. Be explicit - as you revise, show the connections between ideas more precisely.
7. Always keep the audience in mind.
8. Schedule your day to be as efficient as possible. There is no point in sitting at the computer with no ideas. Get up, do something else, e.g. manual work which does not require much thinking, and then get back to the text. In the meanwhile you can get some new ideas, or at least you will be able to formulate the old ones in a better way.
9. Do not try to be “academic” at any price, use direct and plain language. Do not beat about the bush, do not use over sophisticated expressions.
10. In the process of improving your text it may help to read your draft loud and listen for strange wordings or interruptions in the flow of ideas etc. Some people are more sensitive to what they hear and you may belong to them.
11. When your final draft is ready, proofread it very carefully for spelling, grammar, citations, and format. In this “polishing” you will ensure that your MT is perfect in all ways. Do not spoil your previous effort with trivial mistakes. They create your image in the eyes of both the supervisor and the committee.

Odds and ends about format

Where you feel it is necessary, you can highlight some important words and thoughts taken from the literature. You can underline the text or bold it. However, the template has some formats predetermined so check what you can afford.

If you are translating the text from other languages and you are not sure about the right translation or there is no such term in English, together with the term translated by you give also the expression in the original language.

Reference

[1]http://dcc2.bumc.bu.edu/studentservices/StudentResources/Writing_Resource_Guide/writing_resource.htm

18. MT assessment, proofreading

This is a list of questions you should apply to the draft of your MT, early enough to be able to make appropriate changes in the draft. Not all factors have the same importance in various areas. [1]

Questions	Yes/No/Not sure

1. Topic:

- Is the topic clear and well defined? Is it introduced at the beginning of MT?
- Are goals of MT clear?
- Is the choice justified?
- Is it an issue that has not been solved yet and deserves attention?
- Is the thesis statement precise?
- Is the topic relevant to your studies?

2. Literature review:

- Have you studied basic major relevant sources relevant to the topic? Have you included latest literature? Have you selected the sources reasonably (quality x quantity)?
- Is the literature review a compact whole? Have you created a research space for your study (what has been done, what has not been done, you will deal with it in MT)?
- Have you applied a critical view on the literature (comparing, contrasting and commenting on different sources) or have you just taken over the ideas?
- Are all the ideas relevant to your topic?
- Are all the sources referred to in an appropriate way (e.g. paraphrasing x quotations)?
- Can any part of literature review be considered plagiarism?

3. Theoretical background:

- Does the theory penetrate all MT, from statement to conclusion?
- Is the theoretical context well explained?
- Are the statements and conclusions in accordance with the theory?
- Is your approach to the problem consistent from the theoretical point of view?
- Are theoretical and analytical part compatible?

4. Methodology

- Does the chosen methodology suits to the problem you are studying?
- Is it well described, giving neither too little nor too much detail? Does the description enable reproduction of the research to check the results?
- Does the method give persuasive results?
- Is processing of data clearly described (statistics)?

5. Results

- Are your results faithful and justifiable? Do you claim only what you can defend, i.e. are your claims of an appropriate strength?
- Are the results convincing?
- Have you presented only the results directly relevant to the research question?
- Are the results presented clearly, directly and accurately?
- Are they easy to read and understand?
-

6. Conclusions

- Do conclusions reflect the most important results?
- Are all the conclusions based on the results obtained? Do you not speculate too much?
- Do conclusions explain the meaning of results?
- Are conclusions more general/theoretical/connected to the research area or practice than results?

- Are the limitations of the project clearly given?
- Do conclusions reflect the thesis statement?

7. Presentation

- Does the thesis bring any new knowledge?
- Is the material well presented?
- What is the layout of the thesis? Does it keep all the features of the template?
- Does it contain all necessary parts, as indicated in the template?
- Is visual information (graphs, figures, tables) clear and supportive?
- Is each of them referred to in the text?
- Is the thesis logically organized, with strong transitions between sections?
- Does the thesis form a unified whole? Is it consistent?
- Are rules of academic writing applied consistently?
- Is the text free of mistakes?

Proofreading

There are a number of exercises where you may practice proofreading, i.e. correct basic mistakes in spelling and grammar, punctuation and capitalization, structure of the sentence and others. Some of them are:

http://www.englishforjapanese.com/exercises/error%20correction/error%2003.html
http://www.flo-joe.com/fce/students/tests/errtst2.htm
http://members.home.nl/egs.sanders/errorcorrection.htm
http://www.eflnet.com/grammar/generalgrammar_index.php

Reference

[1] http://www.londonmet.ac.uk/londonmet/library/o45178_3.pdf

18. MT assessment, proofreading

MT assessment

At the stage of finalizing your MT, before submitting, you must be a very strict critic/corrector of your own work (if not you, other people will be).

To get a complex assessment, it is good to use a checklist where different aspects are included. An example can be found here. Depending on your research area, you will probably find some terms and categories more useful and important than others; quite understandable because the checklist is designed to serve for different disciplines.

You should also know how MT is evaluated by the supervisor and reviewer (evaluation criteria). For the Master theses written at TBU the supervisor's and reviewer's opinions are published in STAG at present http://www.stag.utb.cz/apps/stag/prohlizeni/. Here you can see, on concrete examples, the criteria applied at your faculty (choose *Ostatní* - *Diplomové práce* enter your faculty, department, keywords or other aspects for MT selection, open the relevant MT and find *Posudek vedoucího/oponenta*). Bear these criteria in mind while self-evaluating your work.

Proofreading

Proofreading is the final step in the process of MT elaboration. It means careful review of the text for errors, such as formatting, grammar, spelling, punctuation, and typing errors, but it can also mean re-arranging the structure of the text to a certain degree. It is a "grey area" and you can hardly ever say that the proofreading is finished. There are always some details which would require improvements. However, you time is limited so at a certain moment you must finalize the MT, print it and submit in the required form.

If you fail to proofread your MT, you can spoil all the previous work. Even brilliant results can be hidden in the forest of mistakes and format inconsistencies. So do not underestimate this detail.

The following part offers you some useful ideas for proofreading.

Aspects and techniques of proofreading

Proofreading can be basically divided into two types (according to the type of details to which you pay attention): the more technical aspects, where you can quite easily decide right x wrong, and more creative aspects, where your subjective approach prevails. The former includes: spelling and grammar, punctuation and capitalization, syntax (structure of the sentence) and correct citation. The latter type of proofreading, more creative, follows: correct use of language and specific terms, coherence of arguments and their logical build-up, clarity and style. Some ideas and exercises on the web will surely help you improve your abilities to see mistakes of different types [1].

If you want to proofread effectively, you must create distance from your text. When you are writing, you are so emerged in the ideas that you cannot see the mistakes and unsuitable choice of language; you actually see what you want to see, not what is written. Thus, it is recommended to put the text aside for some time and then, with a fresh eye, to get back to it as if it were somebody else's work. You will also be in a different set of mind and probably get better formulations. This naturally means that you finish the draft early enough.

There are, however, also other techniques to distance you from your own text:

- proofread a printout version rather than electronic version on the screen, write notes on the margin;
- read the text aloud, hearing sentences may help you realize mistakes in syntax (it just sounds strange);
- keep a list of your common errors and read the text according to it.

Correcting mistakes in spelling and grammar requires a lot of concentration but fortunately there are given rules to apply. Improving the style and structure is more difficult because the process is not governed by any rules. The University sets some general rules but you still have a chance to be creative (in the given limits).

Submitting of the thesis and allowing to defend

When your MT has been written, proofread and printed, you are to find a professional company to bind it, which will also take several days or even a week. The cover of the printed version of MT for FAI is given on the web [2]. It is in Czech but the English version will be very much the same.

Before you attend the company, check your version very carefully. Does it include the title page, scanned assignment of your MT and author's declaration of originality? Does it contain all appendices? Check twice so that your product is perfect. Of course the content is more important, but the form makes the first impression.

The time you are having tour MT bound is suitable to burn the electronic version of MT on CD and file it in IS/STAG. The details are given for FAI (only in Czech) [2].

References

[1]http://www.gold.ac.uk/proofreadingawareness/doing%20your%20own%20proofreading/

http://college.cengage.com/devenglish/wong/paragraph_essentials/1e/students/exercises/index.html

http://jonsenglishsite.info/proofreadingpage.htm

[2] http://web.fai.utb.cz/?id=0_4_12_1_0&iid=0&lang=cs&type=0

19. MT presentation - preparation

When you have submitted your MT in required forms (mostly both electronic and printed versions), you must prepare its oral presentation for the committee as audience. For this occasion bear in mind basic ideas for a good presentation: it must have content, structure, packaging and human element. In more detail:

- It contains information that the audience needs.
- It has a beginning, main body, and end, preferably in this order.
- It must be well prepared; the audience must be able to follow the ideas on first listening.
- A good presentation takes into account direct contact with the listeners, i.e. includes feelings and impressions.

When preparing an oral presentation, you have to keep in mind several important features: the audience, the aim of the communication, differences between written and spoken communication, and the structure of the speech. Though they are in close relationship, they can be analyzed quite independently.

- **Audience**, i.e. listeners are members of the committee who are experts in the area but some may not be quite familiar with your specific topic. Thus, you should formulate a strategy for the specific audience. All of them, however, are on a higher position than you, so your behaviour should reflect this fact.
- The **communicative aim** is to persuade the committee that you are on an appropriate level to get your degree and that your research contributed to the knowledge in the area. This affects the organization of the speech. In other words, you should show mastering the topic from various viewpoints.
- In your presentation you should also show that you understand difference between **spoken** and written communication. The language of spoken presentations is less formal than written language as you communicate with the audience face-to-face. In practice it means that sentences are shorter, grammar is simpler (e.g. you use more active voice). The less formal style used in oral presentations also gives you a chance to use pronouns "we" or even "I" or other personal structures and also rhetorical questions (i.e. questions where you do not expect any answer from the audience). (More details on written vs. spoken language here).
- Generally, a good presentation has a clear structure. It starts with an **introduction** (and possibly a "human touch"; committee members are, believe or not, only people), where you state the purpose of the presentation. Next comes the **body** of the presentation where you give the most important results of the study, and after the body comes **conclusions,** where you explain what the results mean, what are their consequences and proposed actions, i.e. look at your research from distance and put it in context.

Faculties at TBU in Zlín have specific directions for MT defence. FAI's rules are given (in Czech) on http://web.fai.utb.cz/cs/docs/Org_pokyny_SZZ_09.pdf, FT's rules on http://web.ft.utb.cz/?id=0_4_13&lang=cs&type=0.

Structuring aids in presentations

In your speech, you cannot use indicators for a new idea as you do in writing (paragraphs), but you have other choices. The two basic aids are non-verbal and verbal. The former include pausing, voice control and body language.

- **Pausing** can help you divide sections and subsections, or stress an important point. On the other hand, you should avoid pausing in the middle of sentences because it confuses the listener, breaks fluency of the speech and can distort the message.

- You **voice** is a powerful tool in delivering the message. You can use intonation, word stress, voice levels and changes in pace to underline key points. Keep in mind that rising intonation at the end of statements suggests a question, uncertainty or incompletion. Do not use it for statements. And remember - a pleasant, expressive voice is far more stimulating to listen to than a robotic, monotonous one.

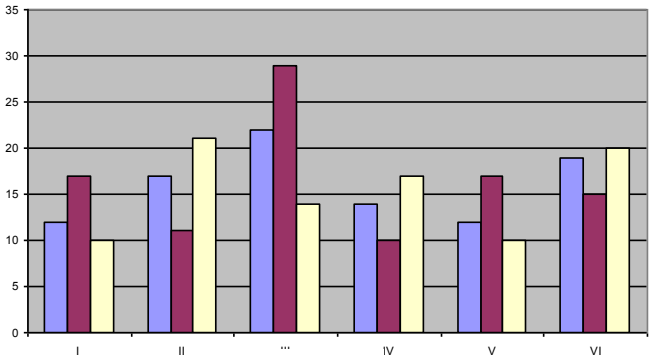
- Your **body language** (movement and expressions) should support the message you are delivering. The audience is affected by non-verbal communication in both positive and negative ways.

Verbal structuring aids are the other tool to lead the audience through your presentation like signposts on the road. No matter what topic you talk about, the "signposts" can be very much the same. Examples of verbal structuring aids are here.

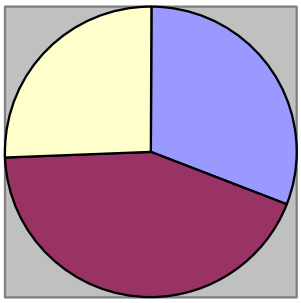
Vocabulary for graph presentation

If you are presenting graphs, you should have basic knowledge about their presentation. Compared to tables, they are more instructive as they instantaneously project the information and you can see trends at first sight.

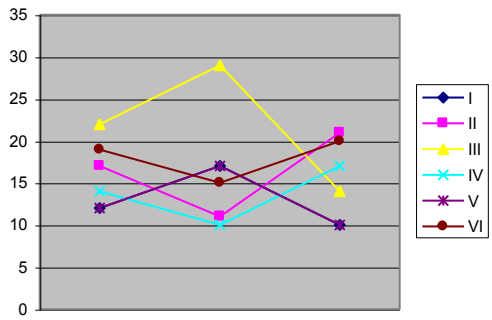
There are various types of graphs, such as bar graph, pie chart, line graph (below), flowchart, histogram and others.



Bar graph



Pie chart



Line graph

When preparing graphs for your presentation:

- Make it simple, bearing in mind the audience and purpose;
- Place titles below or above graphs; keep them clear;
- Make them large enough to be seen from any place in the room;
- Place the information in a logical order;
- Use all suitable tools which would support the purpose, e.g. colours, arrows, different thicknesses of lines, but do not exaggerate (content is more important that form) ;
- Make the units agree, use SI units.

For description of graphical elements (tables, figures, graphs) you will need to know special expressions. To enrich your vocabulary, click here.

Graphs are a type of **visual aids**, one of the typical features of presentations. Visuals should support your communicative aim, enhance your verbal message, i.e. they must be closely connected to the ideas you are talking about, and during the presentation you should refer to them. Visuals also affect the emotional side of the audience's personalities (use of colours and images).

Visual aids significantly improve the interest in a presentation. However, they must be relevant to what you want to say. A careless design or use of visuals can simply ruin the presentation, so always check your visuals - for consistency of fonts and layout, spelling and grammar mistakes.

In your defence speech you will use computer projection (PowerPoint). You are supposed to be able to use various tools the program offers. Well before your presentation make sure you know how to operate the equipment and also when you want a particular visual to appear. Edit your visuals as carefully as your talk - if a visual is not discussed in the presentation, leave it out.

Good visuals are **visible** – they must be legible for any member of the committee. Use colour on your slides, but avoid the colours that do not show up very well when projected. For text, white or yellow on blue is pleasant to look at and easy to read. Of course, there are some other good colour combinations, i.e. contrastive enough.

Make sure your visuals are **simple** - do not want to include too much in one visual. Follow the rule: one visual = one basic idea (plus supportive details); do not include too much primary information. In your talk avoid using a graph prepared for MT, which is too detailed and difficult to read in a short time.

Clarity is another characteristic of good visuals - they must be immediately recognizable in the context of your verbal message. To distinguish more and less important points, use colours and different sizes of text, or use different means (some kind of animation). At the beginning of a visual description, provide an overview - general statement, e.g. "The following figure shows the effect of temperature on viscosity."

In order to communicate your message most efficiently, employ a variety of approaches but never overdo (combining many colours or styles, complicated animation). Always bear in mind that the message you are delivering is more important than the richness of means you use.

Good help for the preparation of your presentation can be templates. Some inspiration can be found on the Internet, e.g. [2].

Process of preparing presentation

In the preparation, first you must be sure about the ***message/information*** you want to present**.** What is novel in your findings? Specify the scope you want to present; do not try to communicate too much, time is short. The second factor which will influence presentation preparation is ***the purpose*** and ***the audience***. As said before, your presentation to the committee should reflect your professional approach to solution of a problem. The third important aspect is the ***time limit.*** Give serious consideration to the time given for the presentation and limit your subject to that time. It is very unpleasant to be interrupted by the chairperson in the middle of the presentation.

Now you should formulate the main idea of your presentation - ***thesis statement***. Then all your presentation should be in line with this.

After it, you must decide about the ***pattern of organisation*** of the ***main body***, i.e. organise your material into a logical pattern: chronological, problem-solution, topical, spatial, general-to-specific, cause and effect, etc., as appropriate to your topic. Eliminate material which is not directly relevant to your propositions and to your thesis statement.

It is good at this stage to ask your colleague(s) for ***peer response***. This should give you the feedback of how your presentation is understandable to others.

Then prepare the ***introduction***. For MT it will be very brief: little or no theory (the audience has better knowledge that you and the time is short). List and discuss your objectives and the main idea of your research.

This will be addressed again in the ***conclusion***: How was the aim reached? Conclusion is probably the most important part of your presentation since it will be best remembered.

When the draft of your presentation is ready (the main body was prepared first), let it rest and come back to it later. Meanwhile you can find better formulations of ideas, or at the second sight you will see what you do not see at first sight.

The basic ideas of the three main parts (introduction, main body, conclusion) will now be put in an appropriate form in PowerPoint (or possibly another suitable computer program). Clear and tidy visuals are a must for an effective presentation.

If you are not skilled in presentations, which may be your case, it is recommended to write a ***full manuscript*** of your presentation, the more if you are presenting in English. This will help you formulate your ideas precisely, think about the meaning of words, apply signposts to lead the listeners through the presentation. You will use this manuscript to rehearse the presentation - practise. Of course, **you will not read full sentences** during the presentation. After several repetitions, when you feel confident enough, discard the manuscript and use only notes with items.

A key point – you must ***practise***. This is the most important factor for effective public speaking. So, repeat the presentation loudly several times, including visuals. At this stage you will see how much time the talk takes, and probably you will have to cut or develop some ideas. Practice and more practice will make you perfect.

References

[1] http://www.differencebetween.net/language/difference-between-written-and-spoken-language/

[2] http://www.nwlink.com/~donclark/hrd/templates/presentations.ppt

19. MT presentation - preparation - examples

Verbal structuring aids

The following part will give you a number of signposts and other language means suitable for presentations. [1]

Opening the speech

What I'd like to do this morning is to present the results of …	I would like to talk about …
I'd like to give you some information on …	I'm going to talk about ….
The subject of my speech is …	

During the speech

I'll be talk about 3 main points.	I'd like to begin by …
The first thing we have to consider is …	First/Firstly/To start with …
Second/Secondly/To go onto my second point …	Finally/My third and last point is …
I would like to turn to …	…and that was a little bit about …
There is one other thing to think about.	On top of that …
Let's now consider …	An interesting feature is …
A significant point is …	A major consideration is …
Now let us move on to …	So, as we can see, …

Closing the speech

Let me summarise the main issues/points.	To sum up/Finally/To round off …
…and I would like to sum it up …	… well, I think that's all I have to say on ….
To go back to my initial argument …	This relates to my first point …
Now I am going to link this back to …	To summarise, …
To recapitulate, …	To round off my speech, …
I would like to conclude by …	

Connectors

Connectors (or linking words) express relationship among ideas you are presenting. They can express the result, cause, effect, contrast, and other functions. The list below may help you enrich the language used as connectors in presentations. It is divided by the function of the connector.

Addition

additionally	again	along with
also	and	and then
apart from	as well (as)	besides,
equally important	further	furthermore
in addition	moreover	next
neither .....nor	together with	too
what's more		

Comparison

after all	at the same time	by comparison
for all that	in the same way	likewise
meanwhile	similarly	simultaneously
unlike		

Contrast

at the same time	but	by contrast
conversely,	in contrast to	instead
notwithstanding	on the contrary	on the one hand

Concession

after all	all the same	Although this is true,
despite	even	even so
for all	however	in spite of
nevertheless	still	yet

Result

accordingly	as a consequence	as a result
consequently	hence	so (informal)
therefore	thus	

Enumeration

finally	first(ly)	furthermore
last(ly)	next	second(ly)
then	third(ly) etc.	to begin/start with

Stressing a point

above all	crucial	essential
first and foremost	I would like to emphasise …	last but not least
most important(ly)	most important(ly)	My main point is …
My primary problem is …	of utmost importance	of vital importance
The major reason for this is …	This is by far superior to …	This is of considerable interest.

Showing time

Afterwards,	And then	Finally,
First, second, …	Formerly,	Immediately
Later	Next	Previously,
Soon,	Then	

Giving examples

As an illustration,	for example	for instance
To demonstrate,	To illustrate,	

Emphasising

As a matter of fact,	In any case/event	In fact,
Indeed,	Obviously,	That is,

Repetition

As I've noted	In brief	In short
As I've said	In other words	

Conclusion

Accordingly,	As a result,	Consequently,
Hence,	Therefore,	Thus,

Summarising

In brief	On the whole	To conclude
In conclusion	Summing up	

Description of visuals - specific language

General

x-axis	y-axis	axes (*pl.*)
bar graph	curve	deviating
exponential	flow chart	histogram
line (solid, broken, dotted)	line graph	linear
logarithmic	mean (=average)	mode
organigram	origin	parallel
perpendicular	pie chart (segments)	plot
range	scale	slope

Talking about changes

upward movement

increase	rise	go up
grow	expand	rocket
boom	climb	progress
escalate		

downward movement

decrease	fall	drop
decline	diminish	go down

regress	reduce	contract
shrink	slump	collapse
end of movement		
flatten out	level off	stabilize
no change		
to remain constant/stable/ steady at	stagnate	to stay the same/at the same level
degree of change		
dramatically	considerably	significantly
moderately	slightly	steeply
sharply		
speed of change		
rapidly	quickly	suddenly
gradually	steadily	slowly
points on the graph		
minimum	local minimum/dip	maximum
local maximum	spike	peak
downward swing	upward swing	
odds an ends		
by (20, 37, ...) %	fluctuation	percent/per cent (*never plural!)*
magnitude	table	statistics

Reference

[1] LENGÁLOVÁ, A. *Communication Skills for International Conferences.* Zlín, UTB, 2006.

20. MT presentation - delivery

Having your presentation carefully prepared, you are ready to deliver it. There are number of aspects which should be considered in presentations; let us briefly review them. [1]

The voice

The voice is probably the most valuable tool of the presenter as it carries most of the content of the presentation. There are four characteristics of vocal qualities:

- **volume**, i.e. how loud the sound is;
- **pace**, i.e. speed of the speech. Talking too fast causes the presentation difficult to understand, while talking too slowly is boring. Varying the pace helps to maintain the audience's attention, i.e. deliver the message successfully. An important thing is pausing, which can help to emphasise the importance of a particular point.
- **pitch**, i.e. how low or high the voice is placed. During your speech you should change the pitch;
- **colour and tone -** it can have a flavour if fear, relax, surprise, frustration or other feelings. A voice of a person who fears is different from that who smiles and is enthusiastic; bear this in mind.

Your aim should be to speak in a conversational tone. This will need practice, but mastering it helps substantially to improve the impression from the presentation.

The body

Your body language is another important factor which will influence the committee because they will not only listen to you, they will also watch you. Your body makes various impressions on the audience: It can tell the audience that you know what you are doing and you care deeply about it on the one hand, or persuades them you are not involved in the research deeply and do not care about it very much.

Your body, or their parts, can work during your MT presentation in various ways to address the audience:

- ***Posture*** **-** You send different messages by the way you talk and move during your presentation. Standing upright, face to face to the audience, shows your friendliness, determination. If you, on the other hand, stand with your back turned, or if you look at the wall (or other part of the room) all the time, you send the signal that you are not interested in the audience or are nervous.
- ***Facial expression*** **-** Smiling is a powerful tool that transmits enthusiasm and friendliness. Of course, it would look unnatural if you carry the same smile all the time (but still better than frowning).
- ***Eye contact*** **-** This helps to control the flow of communication. It signals interest in others, increases the efficiency of communication. Look at the audience as much as possible, but do not fix on an individual - it can be unpleasant - involve all the audience in your presentation.
- ***Gestures*** **-** The right movement of your hands can help you deliver the message very efficiently. If you fail to gesture while speaking, you will look like a dummy. A lively

speaking style captures attention, makes the audience involved in the talk and facilitates understanding. Gestures enable

> mimic or demonstrate an action (using an imaginary tool);

> outline the shape, size of the thing you are talking about (tall, round);

> demonstrate characteristics of an object (elastic, smooth);

> stress an object by pointing at it (a person, a step in a process);

> emphasize a key point in a presentation.

During your presentation avoid bad habits like keeping your hands at your sides or in the pockets, grasping your hand behind your back or in front of you, playing with small objects (paperclips, pens, etc.).

Visuals

Visuals are an indispensable part of a presentation. In your defence speech you will use visuals in PowerPoint and a dataprojector. You are supposed to be able to use various tools the program offers, so make sure you know well how to operate the equipment and also when you want a particular visual to appear. A very complex arrangement can result in confusion for both the speaker and the audience.

Then, during your presentation, speak to your audience, not your visuals; they should support you, not the other way around. Ideally, transparencies/screens are graphics with limited number of words (people read faster than you speak and they will be impatient waiting for you to get to the next point). Visuals also give you the facts, so you just express them in words.

If you use a laser pointer during the presentation, do not wave it in the air. Use it only for what it is intended and then put it down or switch it off (laser pointer), otherwise the audience will become fixed on it, instead on you.

Timing

The time for your MT presentation is limited. There is nothing more frustrating than to hear from the chairperson that the time is over and you have to finish in the middle of explaining your brilliant ideas, so the audience will never learn your conclusions. It is better to finish slightly earlier and have more time for questions than to overrun. Thus, when you have the first version of the presentation, you should rehearse it with all the things you will be doing in real presentation. Speaking loudly takes much more time than if you just read the text for yourself. Also showing your visuals and pointing at details slows the presentation down. The first rehearsal gives you an idea how long the presentation is, and whether you should shorten it or extend.

The oral presentation of your MT is one factor contributing to the assessment of your performance at the final state examination. Careful preparation for the speech is essential for a good final grade.

As written elsewhere in this Guide, your MT will be assessed by two people - the supervisor and the opponent. The written reviews must be accessible to the student before the defence,

thus you will have some time to prepare for both the supervisor's and opponent's questions and comments.

So far we have been talking about the presentation you can prepare beforehand. However, the MT defence procedure is more complex, with these basic parts:

- the candidate's presentation;
- listening to (major parts of) reviews and answering the questions;
- general discussion (questions asked by members of the committee and other attending persons).

The presentation of a thesis defendant is about 10 minutes long. A defence speech will briefly describe the problem, objective, methods, results and conclusions. Then the questions and comments from the reviews are read, which you could prepare for, but also other people present can ask questions which you are to answer without preparation. We are to deal with this in the following part.

Question time

The question time is often a nightmare for the speaker because it means that you must understand not only the area you are directly discussing, but also the background of the problem.

A good message for you is that some types of questions can be expected. So, in the stage of preparation think about possible questions, or ask your friends what they would question and prepare answers. You can even prepare visuals to support your answers; these are not to be shown in the presentation but are ready for the question time.

If you want to provide a good answer, first you have to understand the question. It may happen that you do not understand for the first time; in this case ask the questioner to repeat, or try to paraphrase the question, i.e. repeat in your own words. He/she will either agree with your version or will modify it, but you will get closer to the aim.

Actually, repetition of the question is recommended also because you will get a few seconds to think about the answer. Getting time is always very important, so it is very good to make a pause before each answer, even if you know it immediately. Thus, the responses where you hesitate will not seem so uncertain.

Also the fillers ("well", "OK", ...) will help you if you say them automatically and in the time you can concentrate on what to answer. Sometimes the filling phrase can be longer, like "Oh, this is a good question, thank you very much for it.", so you have more time for the answer formulation.

Answers should be neither very short nor very long (something between 10 and 40 seconds). If they are too short, they seem impolite, while in long answers you can get lost. This is always improvisation and much more difficult to be structured immediately. This needs some practice.

During your presentation do not be defensive, be self-confident in what you can defend. On the other hand, never be offensive, even if the members of the committee are. Bear in mind in what position you are and what you can afford. The last thing you can wish is to make the committee angry.

In the assessment the committee will consider the quality of MT, supervisor's and opponent's opinions and defence speech. The assessment is announced on the day of defence.

Reference

[1] LENGÁLOVÁ, A. *Communication Skills for International Conferences.* Zlín, UTB, 2006.

Academic vocabulary

English – Czech version *(the number gives the frequency of the word)*

abandon 3	opustit, vzdát se
abnormal 6	nenormální
absorb 5	absorbovat
abstract 5	abstraktní; výtah
academic 6	akademický
accelerate 2	urychlit
adequate 3	přiměřený
adhere 8	dodržovat
adjacent 2	přilehlý
adjective 6	příd. jméno
adjust 3	přizpůsobit
administer 4	spravovat
adolescent 7	dospívající
adult 6	dospělý
advocate 5	obhajovat, zastávat názor
aesthetic 4	estetický
affect 2	(za)působit
affiliate 7	přičlenit
affluence 7	hojnost, nadbytek
aggregate 8	nahromadit, seskupit
aggression 8	útok, agrese
agitate 6	zmítat, agitovat
aid 5	pomoci, pomůcka
alcohol 7	alkohol
align 8	seřadit
alternative 1	alternativní
ambiguity 9	dvojznačnost
amorphous 9	amorfní
analogy 4	analogie, obdoba
analyse 1	analyzovat
angular 10	hranatý, úhlový
anomaly 10	anomálie
anonymous 10	anonymní
apparatus 11	zařízení, aparát
appeal 6	působit, dovolávat se
append 10	připojit
appendix 10	přívěsek, dodatek
appraise 4	odhadnout, ocenit
appreciate 3	oceňovat, vážit si
approach 1	přistupovat, přístup
appropriate 3	vhodný
approximate 2	přibližný
arbitrary 1	libovolný
area 3	plocha
aristocrat 7	aristokrat
arithmetic 1	aritmetika
arouse 6	podnítit
ascribe 10	připisovat, přičítat čemu
aspect 6	ohled, aspekt
aspiration 10	vdechnutí; aspirace
assemble 4	shromáždit
assent 10	souhlasit
assert 2	tvrdit, prosazovat
assess 1	stanovit, ohodnotit
asset 9	aktivum
assign 1	stanovit, přidělit
assimilate 10	přizpůsobit, asimilovat
assist 6	pomáhat, podporovat
assume 1	předpokládat, přijmout
assure 4	zajistit, ujistit
astronomy 7	astronomie
atmosphere 4	atmosféra
atom 4	atom
attach 11	připojit
attain 6	postihnout
attitude 3	postoj
attribute 4	přisuzovat, přičítat
auspices 10	příznivé okolnosti, patronát
authorise 2	schválit, povolit
avail 4	užitek, prospěch
averse 9	mající nechuť, odpor
aware 2	uvědomovat si
awe 6	úcta, respekt
axis 4	osa
battery 1	baterie
benefit 6	prospěch
biology 5	biologie
bomb 4	bomba
bore 8	vrtat, těžit
breed 11	plodit; pěstovat
bubble 11	bublina; přivést do varu
bulk 11	množství, masa
bureaucracy 8	byrokracie
commit 6	spáchat; svěřit
commodity 7	druh zboží, komodita
commune 3	lid; být ve styku
communicate 11	sdělit, komunikovat
compel 11	přinutit
compensate 1	kompenzovat
competence 7	schopnost, kompetence
complement 9	doplnit
complex 1	komplex, souhrn
complicate 2	komplikovat
comply 1	vyhovět

component 1 složka, komponenta
deliberate 10 úmyslný, záměrný
democracy 7 demokracie
demonstrate 2 demonstrovat, předvést
denominator 4 jmenovatel
denote 1 znamenat, udávat
dense 4 hustý
deny 5 popřít
depress 7 stlačit, deprimovat
deprive 8 zbavit, připravit o
derive 1 získat, odvodit
design 2 navrhnout
detect 8 objevit, zjistit
detriment 8 škoda, újma
deviate 3 odchýlit
devise 1 vymyslit, vynalézt
devote 2 věnovat, zasvětit
diagram 4 diagram
diameter 11 průměr
dictate 5 diktovat, vyžadovat
diffuse 5 rozšířit, rozptýlit
digest 11 přehledně uspořádat
dimension 1 rozměr
discern 8 rozeznat, rozlišovat
discourse 4 promluva
discrete 3 nespojitý, přetržitý
dispense 10 rozdělovat, vykonávat
disperse 3 rozprášit, rozptýlit
displace 9 odstranit, nahradit
dispose 3 rozmístit; zbavit se
dispute 5 přít se, bojovat
dissipate 8 rozehnat, rozházet,
dissolve 7 rozpustit
distinct 1 zřetelný, odlišný
distort 2 deformovat, zprohýbat
economy 3 hospodářství
edit 5 sestavit, vydat
efficient 9 schopný, účinný
elaborate 4 vypracovat, rozpracovat
electron 5 elektron
element 1 prvek
elevate 10 zvednout, zvýšit
generate 2 vyrobit, generovat
genuine 11 pravý
geography 3 zeměpis
geometry 7 geometrie
germ 11 zárodek, bakterie
goal 4 cíl
grant 5 poskytnout, udělit
graph 5 graf
indigenous 9 původní, vrozený
individual 2 jednotlivý
induce 4 přimět, přivodit
infer 2 usuzovat
inferior 11 podřízený, podřadný
inflation 10 inflace
ingenious 10 důmyslný
inherent 10 základní
inhibit 2 bránit, brzdit
initial 1 počáteční
injure 11 poškodit, poranit
innate 9 vrozený, vlastní
innovation 2 inovace, zlepšení
insist 5 naléhat, trvat na
inspect 1 prohlédnout
instance 11 příklad, situace
instinct 6 instinkt
institute 5 ústav, institut
instruct 5 dávat pokyny
integer 9 celé číslo, celek
integrate 4 sjednotit, integrovat
intellect 3 intelekt, myšlení
intelligent 3 inteligentní
label 5 označit
laboratory11 laboratoř
labour 3 těžce pracovat
launch 8 spustit, zahájit
layer 11 vrstva
lecture 11 přednáška
legal 6 zákonný, právní
legislate 8 vydávat zákony
legitimate 5 legitimní, všeobecně uznávaný
manipulate 2 zacházet, manipulovat
navy 7 námořnictvo
negative 1 negativní
nerve 6 nerv
network 3 síť
neutral 7 neutrální
niche 6 výklenek, útočiště
norm 3 norma, standard
notation 3 záznam
notion 2 názor, dojem
perpetrate 5 spáchat, dopustit se
pole 3 tyč; pól
policy 7 taktika, zásady
pollution 11 znečištění
port 11 přístav; brána; kanál
portion 2 část, podíl
positive 3 pozitivní; jasný

postulate 8	požádat, vyhradit si
potential 1	potenciální, možný
pragmatic 7	pragmatický
precede 2	předcházet
precipitate 7	srážet (se); urychlit
precise 2	přesný
predict 4	předpovídat
preliminary 5	předběžný
premise 8	premisa, předpoklad
preposition 3	předložka
prestige 3	významnost, prestiž
presume 1	předpokládat
prevail 7	převažovat, trvat
previous 3	předcházející
prime 1	začátek; nejlepší
principle 2	princip, zásada
priority 10	priorita, přednost
proceed 1	pokračovat, postupovat
propensity 6	sklon, tendence
proportion 4	poměr, proporce
proprietor 3	majitel, vlastník
prosper 6	prosperovat, prospívat
protest 6	protestovat
province 10	oblast, obor
provoke 8	provokovat, vyvolávat
prudence 7	opatrnost, rozvážnost
psychology 4	psychologie
publish 1	publikovat, vydat
purport 10	záměr
pursue 1	provádět, provozovat
quote 10	citovat
recur 10	vrátit se, opakovat se
reform 7	reformovat, zlepšit
refute 7	vyvrátit, dokázat omyl
region 1	oblast, region
reign 6	vládnout, převládat
reinforce 6	posílit, vyztužit
reject 4	odmítnout
release 4	uvolnit, propustit
relevance 3	významnost, důležitost
reluctant 8	váhavý
rely 3	spoléhat
remove 10	odstranit
render 10	poskytovat; učinit; vyjádřit
repress 10	potlačit, ovládnout
reproduce 8	reprodukovat, zopakovat
repudiate 7	odmítnout, popřít
require 1	vyžadovat
research 4	zkoumat
reservoir 4	nádrž, zásobník
resident 10	vlastní, spočívající v
residue 9	zbytek, usazenina
resource 11	zdroj(e)
respective 2	vlastní, individuální
respond 5	odpovědět
restore 5	obnovit, navrátit
restrict 1	omezit
retain 5	udržet
retard 5	zpomalovat, zpožďovat
reveal 3	odhalit
reverberate 9	odrážet se
reverse 1	obrátit, točit se naopak
revise 6	zkontrolovat, přepracovat
revive 7	obnovit, oživit
revolt 4	vzpírat se
revolve 11	obíhat, kroužit
rhythm 7	rytmus
rigid 8	tuhý; nesmlouvavý
rigour 10	přísnost, asketičnost
role 1	role, poslání
secrete 8	schovat, ukrýt
section 2	úsek, řez
secure 5	zajistit
seek 3	hledat
segment 2	část; odvětví; segment
select 2	vybrat, zvolit
sequence 2	pořadí, sled
series 2	řada, série
sex 8	sex
shift 2	vyměnit, přesunout
shrink 11	srazit se, zmenšit
sibling 7	sourozenec
signify 2	znamenat
similar 1	podobný
simultaneous 2	simultánní, současně probíhající
site 11	místo, dějiště
skeleton 10	kostra, nosná konstrukce
sketch 7	náčrtek, koncept
sociology 7	sociologie
solar 8	sluneční, solární
sophisticated 2	složitý, na vysoké úrovni
source 3	pramen, zdroj
spatial 8	prostorový
species 2	druh; pojem
specify 1	upřesnit, specifikovat
spectrum 7	spektrum, škála
speculate 4	uvažovat, spekulovat

sphere 4	koule; oblast zájmu
spontaneous 4	živelný spontánní
stable 2	stabilní, vyrovnaný
starve 11	hladovět, prahnout po
stationary 9	nehybný, stabilní
statistic 2	statistická položka
status 1	postavení, charakter
stereotype 7	stereotyp, konvence
stimulate 5	podnítit, stimulovat
stipulate 4	ujednat, specifikovat
strata 6	vrstvy
stress 5	tlak, napětí, namáhání
structure 2	struktura
superficial 3	povrchový, vnější
superimpose 4	vrstvit, přidat
superior 5	nadřazený, lepší
supplement 5	dodatek, příloha
suppress 5	potlačit
supreme 8	nejvyšší, rozhodující
surplus 10	přebytek, nadbytek
survey 11	průzkum, přehled
suspend 9	odložit, přerušit
sustain 6	udržet, unést
switch 11	přepnout, změnit
symbol 4	symbol, značka
symptom 5	příznak, symptom
synthetic 5	syntetický
tangent 6	tangent; týkající se
tangible 10	hmatatelný, skutečný
tape 11	pásek, řemínek
task 3	úkol, povinnost
team 11	tým, kolektiv
technique 1	technika, metoda, postup
technology 2	technika, technologie
telescope 11	teleskop, dalekohled
temporary 11	dočasný, přechodný
terminology 6	odborné názvosloví, terminologie
territory 8	území, teritorium
terror 7	hrůza, teror
text 4	text
texture 7	struktura, charakter
theft 11	krádež
theorem 4	poučka, teorém
theory 2	teorie
thermal 7	tepelný, teplotní
tiny 5	maličký
tire 11	pneumatika *Am.*
tissue 7	tkáň
tolerate 10	snášet, tolerovat
tone 6	tón, zvuk; stínování
topic 6	téma, námět
trace 2	sledovat, vystopovat
tractor 11	traktor, tahač
tradition 2	tradice
traffic 11	doprava
trait 5	charakter, rys
transact 7	jednat, vyřizovat
transfer 5	přenést, proměnit
transform 5	přeměnit, transformovat
transition 3	přechod, přechodná fáze
transmit 2	přenášet, doručit
transport 11	dopravit, transportovat
treaty 8	smlouva, jednání
trend 8	směr, tendence, trend
triangle 10	trojúhelník
trivial 5	nedůležitý, triviální
tropical 11	tropický
ultimate 1	konečný, definitivní
undergo 2	podstoupit, prodělat
underlie 3	podléhat, být základem
undertake 11	převzít, podniknout
unduly 9	nadměrně
uniform 6	neměnný, jednotný
upsurge 4	náhlý vzestup
usage 1	zvyklost
utilize 8	využít, upotřebit
vague 10	neurčitý, vágní
valid 1	platný, oprávněný
velocity 9	rychlost
verbal 2	slovní, verbální
verify 2	ověřit, zkontrolovat
version 5	verze, podoba
vertical 1	svislý, vertikální
vibrate 9	kmitat, vibrovat
violate 9	porušit, přestoupit
virtual 6	skutečný; zdánlivý, virtuální
visual 3	viditelný, vizuální
vital 11	životně důležitý; vitální
vocabulary 9	slovní zásoba
volt 11	volt
volume 6	objem; svazek
voluntary 9	dobrovolný
withdraw 11	stáhnout, odejmout
x-ray 9	rentgenovat

Czech - English version

absorbovat	absorb
abstraktní; výtah	abstract
akademická	academic
aktivum	asset
alkohol	alcohol
alternativní	alternative
amorfní	amorphous
analogie, obdoba	analogy
analyzovat	analyse
anomálie	anomaly
anonymní	anonymous
aristokrat	aristocrat
aritmetika	arithmetic
astronomie	astronomy
atmosféra	atmosphere
atom	atom
baterie	battery
biologie	biology
bomba	bomb
bránit, brzdit	inhibit
bublina; přivést do varu	bubble
byrokracie	bureaucracy
celé číslo, celek	integer
cíl	goal
citovat	quote
část, podíl	portion
část; odvětví; segment	segment
dávat pokyny	instruct
deformovat, zprohýbat	distort
demokracie	democracy
demonstrovat, předvést	demonstrate
diagram	diagram
diktovat, vyžadovat	dictate
dobrovolný	voluntary
dočasný, přechodný	temporary
dodatek, příloha	supplement
dodržovat	adhere
doplnit	complement
doprava	traffic
dopravit, transportovat	transport
dospělý	adult
dospívající	adolescent
druh zboží, komodita	commodity
druh; pojem	species
důmyslný	ingenious
dvojznačnost	ambiguity
elektron	electron
estetický	aesthetic
geometrie	geometry
graf	graph
hladovět, prahnout po	starve
hledat	seek
hmatatelný, skutečný	tangible
hojnost, nadbytek	affluence
hospodářství	economy
hranatý, úhlový	angular
hrůza, teror	terror
hustý	dense
charakter, rys	trait
inflace	inflation
inovace, zlepšení	innovation
instinkt	instinct
intelekt, myšlení	intellect
inteligentní	intelligent
jednat, vyřizovat	transact
jednotlivý	individual
jmenovatel	denominator
kmitat, vibrovat	vibrate
kompenzovat	compensate
komplex, souhrn	complex
komplikovat	complicate
konečný, definitivní	ultimate
kostra, nosná konstrukce	skeleton
koule; oblast zájmu	sphere
krádež	theft
laboratoř	laboratory
legitimní, všeobecně uznávaný	legitimate
libovolný	arbitrary
lid; být ve styku	commune
mající nechuť, odpor	averse
majitel, vlastník	proprietor
maličký	tiny
místo, dějiště	site
množství, masa	bulk
náčrtek, koncept	sketch
nadměrně	unduly
nádrž, zásobník	reservoir
nadřazený, lepší	superior
náhlý vzestup	upsurge
nahromadit, seskupit	aggregate
naléhat, trvat na	insist
námořnictvo	navy
navrhnout	design
názor, dojem	notion
nedůležitý, triviální	trivial
negativní	negative
nehybný, stabilní	stationary

nejvyšší, rozhodující	supreme
neměnný, jednotný	uniform
nenormální	abnormal
nerv	nerve
nespojitý, přetržitý	discrete
neurčitý, vágní	vague
neutrální	neutral
norma, standard	norm
obhajovat, zastávat názor	advocate
obíhat, kroužit	revolve
objem; svazek	volume
objevit, zjistit	detect
oblast, obor	province
oblast, region	region
obnovit, navrátit	restore
obnovit, oživit	revive
obrátit, točit se naopak	reverse
oceňovat, vážit si	appreciate
odborné názvosloví, terminologie	terminology
odhadnout, ocenit	appraise
odhalit	reveal
odchýlit	deviate
odložit, přerušit	suspend
odmítnout	reject
odmítnout, popřít	repudiate
odpovědět	respond
odrážet se	reverberate
odstranit	remove
odstranit, nahradit	displace
ohled, aspekt	aspect
omezit	restrict
opatrnost, rozvážnost	prudence
opustit, vzdát se	abandon
osa	axis
ověřit, zkontrolovat	verify
označit	label
pásek, řemínek	tape
platný, oprávněný	valid
plodit; pěstovat	breed
plocha	area
pneumatika *Am.*	tire
počáteční	initial
podléhat, být základem	underlie
podnítit	arouse
podnítit, stimulovat	stimulate
podobný	similar
podřízený, podřadný	inferior
podstoupit, prodělat	undergo
pokračovat, postupovat	proceed
pomáhat, podporovat	assist
poměr, proporce	proportion
pomoci, pomůcka	aid
popřít	deny
porušit, přestoupit	violate
pořadí, sled	sequence
posílit, vyztužit	reinforce
poskytnout, udělit	grant
poskytovat; učinit; vyjádřit	render
postavení, charakter	status
postihnout	attain
postoj	attitude
poškodit, poranit	injure
potenciální, možný	potential
potlačit	suppress
potlačit, ovládnout	repress
poučka, teorém	theorem
povrchový, vnější	superficial
pozitivní; jasný	positive
požádat, vyhradit si	postulate
pragmatický	pragmatic
pramen, zdroj	source
pravý	genuine
premisa, předpoklad	premise
princip, zásada	principle
priorita, přednost	priority
prohlédnout	inspect
promluva	discourse
prospěch	benefit
prosperovat, prospívat	prosper
prostorový	spatial
protestovat	protest
provádět, provozovat	pursue
provokovat, vyvolávat	provoke
průměr	diameter
průzkum, přehled	survey
prvek	element
přebytek, nadbytek	surplus
předběžný	preliminary
předcházející	previous
předcházet	precede
předložka	preposition
přednáška	lecture
předpokládat	presume
předpokládat, přijmout	assume
předpovídat	predict
přehledně uspořádat	digest
přechod, přechodná fáze	transition
přeměnit, transformovat	transform
přenášet, doručit	transmit

přenést, proměnit	transfer
přepnout, změnit	switch
přesný	precise
převažovat, trvat	prevail
převzít, podniknout	undertake
přibližný	approximate
přičlenit	affiliate
přídavné jméno	adjective
příklad, situace	instance
přilehlý	adjacent
přiměřený	adequate
přimět, přivodit	induce
přinutit	compel
připisovat, přičítat čemu	ascribe
připojit	append
připojit	attach
přísnost, asketičnost	rigour
přístav; brána; kanál	port
přistupovat, přístup	approach
přisuzovat, přičítat	attribute
přít se, bojovat	dispute
přívěsek, dodatek	appendix
příznak, symptom	symptom
příznivé okolnosti, patronát	auspices
přizpůsobit	adjust
přizpůsobit, asimilovat	assimilate
psychologie	psychology
publikovat, vydat	publish
působit, dovolávat se	appeal
původní, vrozený	indigenous
reformovat, zlepšit	reform
rentgenovat	x-ray
reprodukovat, zopakovat	reproduce
role, poslání	role
rozdělovat, vykonávat	dispense
rozehnat, rozházet,	dissipate
rozeznat, rozlišovat	discern
rozměr	dimension
rozmístit; zbavit se	dispose
rozprášit, rozptýlit	disperse
rozpustit	dissolve
rozšířit, rozptýlit	diffuse
rychlost	velocity
rytmus	rhythm
řada, série	series
sdělit, komunikovat	communicate
seřadit	align
sestavit, vydat	edit
sex	sex
shromáždit	assemble
schopnost, kompetence	competence
schopný, účinný	efficient
schovat, ukrýt	secrete
schválit, povolit	authorise
simultánní, současně probíhající	simultaneous
síť	network
sjednotit, integrovat	integrate
sklon, tendence	propensity
skutečný; zdánlivý, virtuální	virtual
sledovat, vystopovat	trace
slovní zásoba	vocabulary
slovní, verbální	verbal
složitý, na vysoké úrovni	sophisticated
složka, komponenta	component
sluneční, solární	solar
směr, tendence, trend	trend
smlouva, jednání	treaty
snášet, tolerovat	tolerate
sociologie	sociology
souhlasit	assent
sourozenec	sibling
spáchat, dopustit se	perpetrate
spáchat; svěřit	commit
spektrum, škála	spectrum
spoléhat	rely
spravovat	administer
spustit, zahájit	launch
srazit se, zmenšit	shrink
srážet (se); urychlit	precipitate
stabilní, vyrovnaný	stable
stáhnout, odejmout	withdraw
stanovit, ohodnotit	assess
stanovit, přidělit	assign
statistická položka	statistic
stereotyp, konvence	stereotype
stlačit, deprimovat	depress
struktura	structure
struktura, charakter	texture
svislý, vertikální	vertical
symbol, značka	symbol
syntetický	synthetic
škoda, újma	detriment
taktika, zásady	policy
tangent; týkající se	tangent
technika, metoda, postup	technique
technika, technologie	technology

teleskop, dalekohled	telescope
téma, námět	topic
teorie	theory
tepelný, teplotní	thermal
text	text
těžce pracovat	labour
tkáň	tissue
tlak, napětí, namáhání	stress
tón, zvuk; stínování	tone
tradice	tradition
traktor, tahač	tractor
trojúhelník	triangle
tropický	tropical
tuhý; nesmlouvavý	rigid
tvrdit, prosazovat	assert
tyč; pól	pole
tým, kolektiv	team
úcta, respekt	awe
udržet	retain
udržet, unést	sustain
ujednat, specifikovat	stipulate
úkol, povinnost	task
úmyslný, záměrný	deliberate
upřesnit, specifikovat	specify
urychlit	accelerate
úsek, řez	section
ústav, institut	institute
usuzovat	infer
útok, agrese	aggression
uvažovat, spekulovat	speculate
uvědomovat si	aware
uvolnit, propustit	release
území, teritorium	territory
užitek, prospěch	avail
váhavý	reluctant
vdechnutí; aspirace	aspiration
věnovat, zasvětit	devote
verze, podoba	version
vhodný	appropriate
viditelný, vizuální	visual
vládnout, převládat	reign
vlastní, individuální	respective
vlastní, spočívající v	resident
volt	volt
vrátit se, opakovat se	recur
vrozený, vlastní	innate
vrstva	layer
vrstvit, přidat	superimpose
vrstvy	strata
vrtat, těžit	bore
vybrat, zvolit	select
vydávat zákony	legislate
vyhovět	comply
výklenek, útočiště	niche
vyměnit, přesunout	shift
vymyslit, vynalézt	devise
vypracovat, rozpracovat	elaborate
vyrobit, generovat	generate
využít, upotřebit	utilize
vyvrátit, dokázat omyl	refute
významnost, důležitost	relevance
významnost, prestiž	prestige
vyžadovat	require
vzpírat se	revolt
začátek; nejlepší	prime
zacházet, manipulovat	manipulate
zajistit	secure
zajistit, ujistit	assure
základní	inherent
zákonný, právní	legal
záměr	purport
(za)působit	affect
zárodek, bakterie	germ
zařízení, aparát	apparatus
záznam	notation
zbavit, připravit o	deprive
zbytek, usazenina	residue
zdroj(e)	resource
zeměpis	geography
získat, odvodit	derive
zkontrolovat, přepracovat	revise
zkoumat	research
zmítat, agitovat	agitate
znamenat	signify
znamenat, udávat	denote
znečištění	pollution
zpomalovat, zpožďovat	retard
zřetelný, odlišný	distinct
zvednout, zvýšit	elevate
zvyklost	usage
živelný spontánní	spontaneous
životně důležitý; vitální	vital