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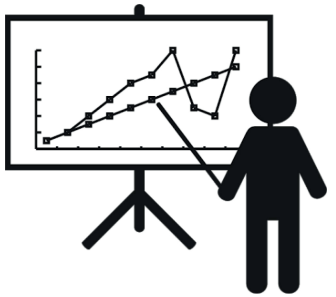
АКАДЕМІЧНЕ ПИСЬМО ТА ПРЕЗЕНТАЦІЯ

Навчальний посібник



586471-EPP-1-2017-1-EE-EPPKA2-CBHE-JP

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
ОДЕСЬКИЙ ДЕРЖАВНИЙ ЕКОЛОГІЧНИЙ УНІВЕРСИТЕТ

О.В. ШАБЛІЙ, І.Ю. ПЬЯНОВА

АКАДЕМІЧНЕ ПИСЬМО ТА ПРЕЗЕНТАЦІЯ

Навчальний посібник

Затверджено вченою радою Одеського державного екологічного університету Міністерства освіти і науки України як навчальний посібник для здобувачів магістерського і освітньо-наукового рівня вищої освіти (протокол №7 від 24.09.2020 р.)

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Ш13 Академічне письмо та презентація: навчальний посібник (англійською мовою) для здобувачів РВО PhD 2 року навчання за спеціальністю 103 “Науки про Землю”. Житомир: ТОВ «505», 2021. 86 с.

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Навчальний посібник “Академічне письмо та презентація” присвячений основним аспектам написання наукових публікацій та створення наукових презентацій англійською мовою. Наведений матеріал спрямований на вироблення активних навичок академічного письма та презентації, а також запобігає припущенню магістрантами та аспірантами найбільш типових помилок під час представлення різного роду наукових робіт англійською мовою. Навчальний посібник складається з двох частин: академічне письмо та академічні презентації, кожна з яких містить лекційний матеріал, відповідні приклади та практичні завдання. Зокрема, розглянуто такі питання, як структурування письмової роботи, лексико-граматичні аспекти, редагування, планування презентації та засоби візуалізації.

Цей навчальний посібник призначений для підготовки здобувачів ступеню доктора філософії ОДЕКУ 2 р.н. за спеціальністю 103 “Науки про Землю”, в якості змістовного модулю дисципліни «Професійна англійська мова», може бути рекомендований здобувачам рівня вищої освіти PhD інших спеціальностей 1-2 р.н. та студентам І-ІІ курсу освітньо-кваліфікаційного рівня «магістр» всіх напрямків і спеціалізацій, а також може бути корисний студентам інших ЗВО, молодим вченим та науковцям.

Видання підготовлено в рамках проекту 586471-EPP-1-2017-1-EE-EPPKA2-CBHE-JP «Комплексна докторська програма з екологічної політики, менеджменту природокористування та техноекології – INTENSE». Підтримка Європейської Комісії видавництва цієї публікації не включає схвалення її змісту, що відображає тільки погляд авторів, і Європейська Комісія не може нести відповідальність за будь-яке використання інформації, що міститься в цьому виданні.

The tutorial on ‘Academic Writing and Presentation’ is devoted to the main aspects of writing scientific publications and elaboration of academic presentations in English. The provided content is aimed at development of active academic writing and presentation skills, as well as prevents Master and PhD students from making the most common mistakes when presenting various academic papers in English. The tutorial consists of two parts: academic writing and academic presentations, each of which contains lectures, relevant examples and practical assignments. In particular, such issues as structuring written work, lexico-grammatical aspects, editing, planning a presentation and visualization tools are covered.

This tutorial is intended for training of OSENU PhD students (2nd year of study) in the speciality 103 ‘Earth Sciences’, as a module of the course ‘English for Specific Purposes’, can be recommended to PhD students (1st - 2nd year of study) in other specialities and MSc students (1st - 2nd year of study) in all subject areas and specializations, and can also be useful to students of other HEIs, young scientists and researchers.

The publication was prepared in the framework of the project of 586471-EPP-1-2017-1-EE-EPPKA2-CBHE-JP ‘Integrated Doctoral Program for Environmental Policy, Management and Technology – INTENSE’ The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

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CONTENT

Preface

The publication was developed under the project 'Integrated Doctoral Program for Environmental Policy, Management and Technology – INTENSE', 586471-EPP-1-2017-1-EE-EPPKA2-CBHE-JP, aimed at integration of doctoral programs related to environmental studies in 7 partner institutions to 3 INTENSE national doctoral schools, assembling the INTENSE doctoral schools into the international network, enhancing the INTENSE doctoral schools with innovative learning and governance infrastructure, and ensuring their sustainability and further growth.

Academic writing implies activities on the creation of specialized professional scientific or educational texts, and presentation of research results in writing. Academic writing differs from general writing in that it deals with the theories and causes that condition the processes and practices of everyday life, and explores alternative explanations for the events. The tutorial on 'Academic Writing and Presentation' is devoted to the main aspects of writing scientific publications and elaboration of academic presentations in English. The provided content is aimed at development of active academic writing and presentation skills, as well as prevents Master and PhD students from making the most common mistakes when publishing the results of their own research in English.

The tutorial consists of two parts: academic writing and academic presentations, each of which contains lectures, relevant examples and practical assignments. In particular, such issues as structuring written work, lexico-grammatical aspects, editing, planning a presentation and visualization tools are covered.

The objectives of the tutorial are as follows:
- development and consolidation of students' skills in making scientific publications and presenting research in English;
- gaining of the ability to make a high-quality presentation of the research, based on the visualization of research data, by the students in order to have opportunity to show their worth at scientific conferences;
- analysis of key problem points that students face during preparation of an academic presentation, and identification of possible ways to solve them;
- formation of academic writing and presentation skills of sufficient quality in post-graduate students in order to present various academic papers, particularly, in English.

As general learning outcomes, the students are to gain new knowledge and develop the competencies they have: skills in writing scientific publications in English at the required level, and ability to make a high-quality presentation of various academic papers in English.

Part 1 Academic Writing

1.1 Academic writing: purpose, features and rules

Purpose

Academic writing is generally quite formal, objective (impersonal) and technical. It is formal by avoiding casual or conversational language, such as contractions or informal vocabulary. It is impersonal and objective by avoiding direct reference to people or feelings, and instead emphasising objects, facts and ideas. It is technical by using vocabulary specific to the discipline. [1]

Different disciplines also have different styles and structures of writing. For example, some disciplines, such as in the humanities, expect longer paragraphs, which include topic sentences to show how your argument is structured. Other disciplines, for example in the sciences, expect short paragraphs, with no topic sentences, which are denser in factual information.

To be a good academic writer, you will need to learn the specific styles and structures for your discipline, as well as for each individual writing task. Some ways to do this are to:

- ask for more information from your lecturer/supervisor/tutor
- study the writing style of the academic articles in the most prestigious journals in your discipline
- look at the successful writing by other students in your subject area. [1]

Formal language

You can make your writing more formal through the vocabulary that you use. For academic writing [1]:

- choose formal instead of informal vocabulary. For example, ‘somewhat’ is more formal than ‘a bit’, ‘insufficient’ is more formal than ‘not enough’.
- avoid contractions. For example, use ‘did not’ rather than ‘didn’t’.
- avoid emotional language. For example, instead of strong words such as ‘wonderful’ or ‘terrible’, use more moderate words such as ‘helpful’ or ‘problematic’.
- instead of using absolute positives and negatives, such as ‘proof’ or ‘wrong’, use more cautious evaluations, such as ‘strong evidence’ or ‘less convincing’.

Objective language

Although academic writing usually requires you to be objective and impersonal (not mentioning personal feelings), often you may still have to present your opinion. For example, you may need to [1]:

- interpret findings
- evaluate a theory
- develop an argument
- critique the work of others.

To express your point of view and still write in an objective style, you can use the following strategies [1]:

- Move information around in the sentence to emphasise things and ideas, instead of people and feelings. For example, instead of writing 'I believe the model is valid, based on these findings', write 'These findings indicate that the model is valid'.
- Avoid evaluative words that are based on non-technical judgements and feelings. For example, use 'valid' or 'did not demonstrate' instead of 'amazing' or 'disappointment'.
- Avoid intense or emotional evaluative language. For example, instead of writing 'Parents who smoke are obviously abusing their children', write 'Secondhand smoke has some harmful effects on children's health'.
- Use modality to show caution about your views, or to allow room for others to disagree. For example, instead of writing 'I think secondhand smoke causes cancer', write 'There is evidence to support the possibility that secondhand smoke increases the risk of cancer'.
- Find authoritative sources, such as authors, researchers and theorists in books or articles, who support your point of view, and refer to them in your writing. For example, instead of writing 'Language is, in my view, clearly something social', write 'As Halliday (1973) argues, language is intrinsically social'.

Different disciplines often have quite different expectations about how objective or subjective your writing can be. For example, in some fields it is fine to use first person, such as 'my view is that...', while in other fields this is not acceptable. You should look at the convention used in published articles in your discipline area, and check with your lecturer. [1]

Technical language

As well as using formal language, you also need to write technically. This means that you need to develop a large vocabulary for the concepts specific to the discipline or specialisation you're writing for. To do this, take note of terminology used by your lecturer and tutor, as well as in your readings.

Be careful about the meaning of technical terms. Often the same word has a different meaning in another discipline. For example, 'discourse' is a technical term used in multiple disciplines with different meanings.

Make sure you also understand and use the key categories and relationships in your discipline, that is, the way information and ideas are organised into groups. For example, in the discipline of Law, law is separated into two types: common law and statute law. Knowing these distinctions will help you structure your writing and make it more technical and analytical. [1]

Features and Rules of Academic Writing

Obviously, there are many distinctive features about academic writing style, but before we get to that, one has to know some rules of academic writing. First of all, it is correct grammar, clear organization of written content and proper academic writing format. These are fundamental things one has to adhere to in this type of writing. The actual rules are all about the proper use of literary devices, word choice, style and values. The general purpose of academic writing is to present information in order to display a clear understanding of a particular subject. There are different types of academic writing however, and each of them has its specific purpose (explain, describe, retell, persuade, etc.). Now as we have covered the basics, let's move on to the actual features of this type of writing. [2]

Precision. Effective academic writing assumes the abundant use of specific dates and figures. Vague word combinations like "a lot of people" or "someone said" aren't considered good academic writing expressions. 50 thousand, 76%, 1789 miles, year 2011 – these are the words that fit the academic context much better. This would be quite typical academic sentence, for example: Biologist had attempted to synthesize molecular developments for the previous 10 years. [2]

Complexity. If you compare your everyday talk with academic writing, you will easily notice that written language is more complex. It is more sophisticated also from the grammatical standpoint as it utilizes more subordinate and "that-to" complement clauses as well as more attributive adjectives. Academic writing also features more lexical variations in comparison to spoken language. For example, if you could say to your friend something like "Violence has changed once quiet US cities" in academic writing it would look more like "The cities in the United States of America had once been quiet, but they changed when people became violent." [2]

Formality. Informal language assumes the abundant use of colloquial expressions like "sort of", "stuff", etc. along with abbreviated forms of words and phrasal word verbs (for instance, put off). If you have ever read any of the articles on

academic writing tips, you must know that the aforementioned informalities are not appropriate in this context. [2]

Objectivity. This may well be the hardest requirement of academic writing for students as they often tend to focus on what they feel and believe when writing their assignments. The thing is that when we are talking about objectivity, we mean that the main emphasis should be on the presented information and/or arguments rather than what you "think about the issue". Professors in colleges aren't particularly interested in just what you think; instead, they need to know what you have studied, how you can back up your arguments, and how you can draw your conclusions. So, if you have to write an academic paper, forget about appealing to reader's emotions as well as using "I", "me", "in my opinion", etc. [2]

Accuracy. Being accurate in the use of vocabulary is another important requirement for all academic papers. In everyday conversations, words like "money", "cash" and "funds" can be used interchangeably. However, when you work on an academic paper, you have to be accurate in using these terms appropriately because each one of them has its specific meaning and context. Despite the fact that they all seem to present pretty much the same concept, these terms have their own distinctive features and applications.

Now that you know the academic writing definition and the distinctive features of this kind of writing, you can be more productive when handling your college assignments. There are a lot of students who have a difficult time when tasked with writing essays and research projects simply because they do not understand the requirements of academic writings and, consequently, what they are asked to produce. A lot of them are shocked to find out their grades when they receive their papers. The problem is that the majority of students do not understand what academic writing is all about. If you learn the aforementioned features and do your best to adhere to them when working on your college assignment, then most likely you will not be disappointed with your essay grades ever since. [2]

1.2 Types of academic writing

Developing your writing capabilities is an important part of your study at university. You need to understand the different types of academic writing you are required to use and how to plan and structure your work and appropriately acknowledge your references. [1]
The four main types of academic writing are descriptive, analytical, persuasive and critical. Each of these types of writing has specific language features and purposes.

In many academic texts you will need to use more than one type. E.g., in an empirical thesis:

- you will use critical writing in the literature review to show where there is a gap or opportunity in the existing research
- the methods section will be mostly descriptive to summarise the methods used to collect and analyse information
- the results section will be mostly descriptive and analytical as you report on the data you collected
- the discussion section is more analytical, as you relate your findings back to your research questions, and also persuasive, as you propose your interpretations of the findings. [1]

Descriptive

The simplest type of academic writing is descriptive. Its purpose is to provide facts or information. An example would be a summary of an article or a report of the results of an experiment.
The kinds of instructions for a purely descriptive assignment include: 'identify', 'report', 'record', 'summarise' and 'define'. [1]

Analytical

It is rare for a university-level text to be purely descriptive. Most academic writing is also analytical. Analytical writing includes descriptive writing, but also requires you to re-organise the facts and information you describe into categories, groups, parts, types or relationships.
Sometimes, these categories or relationships are already part of the discipline, while in other cases you will create them specifically for your text. If you are comparing two theories, you might break your comparison into several parts, e.g.: how each theory deals with social context, how each theory deals with language learning, and how each theory can be used in practice.
The kinds of instructions for an analytical assignment include: 'analyse', 'compare', 'contrast', 'relate', and 'examine'. [1]
To make your writing more analytical:

- spend plenty of time planning. Brainstorm the facts and ideas, and try different ways of grouping them, according to patterns, parts, similarities and differences. You could use colour-coding, flow charts, tree diagrams or tables.
- create a name for the relationships and categories you find. E.g., advantages and disadvantages.
- build each section and paragraph around one of the analytical categories.
- make the structure of your paper clear to your reader, by using topic sentences and a clear introduction.

Persuasive

In most academic writing, you are required to go at least one step further than analytical writing, to persuasive writing. Persuasive writing has all the features of analytical writing (that is, information plus re-organising the information), with the addition of your own point of view. Most essays are persuasive, and there is a persuasive element in at least the discussion and conclusion of a research article.
Points of view in academic writing can include an argument, recommendation, interpretation of findings or evaluation of the work of others. In persuasive writing, each claim you make needs to be supported by some evidence, for example a reference to research findings or published sources.
The kinds of instructions for a persuasive assignment include: 'argue', 'evaluate', 'discuss', and 'take a position'. [1]

To help reach your own point of view on the facts or ideas:

- read some other researchers' points of view on the topic. Who do you feel is the most convincing?
- look for patterns in the data or references. Where is the evidence strongest?
- list several different interpretations. What are the real-life implications of each one? Which ones are likely to be most useful or beneficial? Which ones have some problems?
- discuss the facts and ideas with someone else. Do you agree with their point of view?

To develop your argument:

- list the different reasons for your point of view
- think about the different types and sources of evidence which you can use to support your point of view
- consider different ways that your point of view is similar to, and different from, the points of view of other researchers
- look for various ways to break your point of view into parts. E.g., cost effectiveness, environmental sustainability, scope of real-world application.

To present your argument, make sure:

- your text develops a coherent argument where all the individual claims work together to support your overall point of view
- your reasoning for each claim is clear to the reader
- your assumptions are valid
- you have evidence for every claim you make
- you use evidence that is convincing and directly relevant. [1]

Critical

Critical writing is common for research, postgraduate and advanced undergraduate writing. It has all the features of persuasive writing, with the added feature of at least one other point of view. While persuasive writing requires you to have your own point of view on an issue or topic, critical writing requires you to consider at least two points of view, including your own.
E.g., you may explain a researcher's interpretation or argument and then evaluate the merits of the argument, or give your own alternative interpretation.
Examples of critical writing assignments include a critique of a journal article, or a literature review that identifies the strengths and weaknesses of existing research. The kinds of instructions for critical writing include: 'critique', 'debate', 'disagree' and 'evaluate'. [1]

You need to:

- accurately summarise all or part of the work. This could include identifying the main interpretations, assumptions or methodology.
- have an opinion about the work. Appropriate types of opinion could include pointing out some problems with it, proposing an alternative approach that would be better, and/or defending the work against the critiques of others.
- provide evidence for your point of view. Depending on the specific assignment and the discipline, different types of evidence may be appropriate, such as logical reasoning, reference to authoritative sources and/or research data.

Critical writing requires strong writing skills. You need to thoroughly understand the topic and the issues. You need to develop an essay structure and paragraph structure that allows you to analyse different interpretations and develop your own argument, supported by evidence. [1]

1.3 Planning your writing

There are two main approaches to organising and analysing information for academic writing.

- The planning approach: spend a lot of time on different types of planning before you begin writing. Only start writing when you know what you will write in each paragraph.
- The drafting approach: start writing early, while you are still developing your ideas. Write many drafts and gradually re-organise your text until your ideas are clear and your paragraphs are well structured. [1]

Both of these approaches can be successful. However, if your writing needs to be more logical, clear or analytical, focus more on your planning. Creating a good plan is a very positive early step towards writing a good assignment.

While some types of written work are the same in many disciplines, such as essays, there are also some kinds that only belong to a particular discipline. Sometimes even in the same discipline area, different lecturers will have different expectations about a particular type of assignment.

It's therefore important you understand exactly what type of assignment you're expected to write. For example, it could be an essay, report, case study, reflection or critical review.

You can find out what is expected by looking at key sources of information including:

- written assignment instructions
- grade descriptors, rubrics or marking guides. These list the parts of the assignment, how many marks each part is worth, and/or list the qualities in the assignment that will achieve certain grades.
- advice from your lecturer or tutor
- the unit of study outline
- discussion with other students
- general assignment guidelines prepared by some schools, departments or faculties
- model assignments. Some lecturers, departments or schools keep copies of good assignments done by previous students, as models of the right style and structure
- the eLearning resources. [1]

You should identify all the things you need to do to write your paper. This could include:

- a library database search and catalogue search to find relevant journal articles or books
- reading and note-taking
- brainstorming
- analysing data
- planning the structure of your assignment
- drafting
- discussion
- editing and proofreading.

Estimate the time you need for each task and make a realistic plan based on how you work. Some people spend longer reading and analysing before they start writing, while others start writing earlier and write several drafts. [1]

Initially capture as many ideas as possible, without worrying about structure. E.g.:

- carefully read and think about the assignment or task, and its purpose
- brainstorm lists of key words and topics, to give direction to your reading and research
- draw mindmaps, diagrams and flowcharts
- discuss your ideas with someone else

- list all the readings you could use
- read the abstracts for the relevant sources and make notes on how each article could be useful
- for a large task like a thesis or dissertation, use EndNote, or similar software, to save your references and notes.

After this initial planning, you can start working out the structure of your assignment.

1.4 Structuring written work

Some assignments have a standard format, such as lab reports or case studies, and these will normally be explained in your course materials. For other assignments, you will have to come up with your own structure. [1]

Your structure might be guided by:

- the assignment question. For example, it may list topics or use wording such as 'compare and contrast'
- the subject matter itself, which may suggest a structure based on chronology, process or location
- your interpretation of the subject matter. E.g., problem/solution, argument/counter-argument or sub-topics in order of importance
- the structure of other texts you have read in your discipline. Look at how the information is organised and sequenced. Make sure you modify the structure to suit your purpose to avoid plagiarism.

Essays

Essays are a very common form of academic writing. Like most of the texts you write at university, all essays have the same basic three-part structure: introduction, main body and conclusion. However, the main body can be structured in many different ways. [1]

To write a good essay:

- know if you're expected to write an analytical, persuasive or critical essay
- clearly structure your main body and paragraphs
- use appropriate referencing
- use academic language.

Reports

Reports generally have the same basic structure as essays, with an introduction, body and conclusion. However, the main body structure can vary widely, as the term 'report' is used for many types of texts and purposes in different disciplines. Find out as much as possible about what type of report is expected.

How to plan your structure

There are many ways to come up with a structure for your work. If you're not sure how to approach it, try some of the strategies below.
During and after reading your sources, take notes and start thinking about ways to structure the ideas and facts into groups. For example:
- look for similarities, differences, patterns, themes or other ways of grouping and dividing the ideas under headings. This could include advantages, disadvantages, causes, effects, problems, solutions or types of theory
- use coloured highlighters or symbols to tag themes or categories of information in your readings or notes
- cut and paste notes in a document
- physically group your readings or notes into piles. [1]

It is a good idea to brainstorm a few different ways of structuring your assignment once you have a rough idea of the main issues. Do this in outline form before you start writing – it is much easier to re-structure an outline than a half-finished essay. For example:
- draw some tree diagrams, mind-maps or flowcharts showing which ideas, facts and references would be included under each heading
- discard ideas that don't fit into your overall purpose, and facts or references that are not useful for what you want to discuss
- if you have a lot of information, such as for a thesis or dissertation, create some tables to show how each theory or reading relates to each heading (this is often called a 'synthesis grid')
- plan the number of paragraphs you need, the topic heading for each one, and dot points for each piece of information and reference needed
- try a few different possible structures until you find the one that works best.

Eventually, you will have a plan that is detailed enough for you to start writing. You shall know which ideas go into each section and, ideally, each paragraph, and also where to find evidence for the ideas in your notes and the sources of that evidence.
If you are having difficulties with the process of planning the structure of your assignment, consider trying a different strategy for grouping and organising your information. [1]

Making the structure clear

Your writing will be clear and logical to read if it's easy to see the structure and how it fits together. You can achieve this in several ways.
- Use the end of the introduction to show the reader what structure to expect.
- Use headings and sub-headings to clearly mark the sections (if these are acceptable for your discipline and assignment type).

- Use topic sentences at the beginning of each paragraph, to show the reader what the main idea is, and to link back to the introduction and/or headings and sub-headings.
- Show the connections between sentences. The beginning of each sentence should link back to the main idea of the paragraph or a previous sentence.
- Use conjunctions and linking words to show the structure of relationships between ideas. Examples of conjunctions include: however, similarly, in contrast, for this reason, as a result and moreover. [1]

Introductions

Most of the types of texts you write for university need to have an introduction. Its purpose is to clearly tell the reader the topic, purpose and structure of the paper. As a rough guide, an introduction might be between 10 and 20 percent of the length of the whole paper and has three main parts.

1. The most general information, such as background and/or definitions.
2. The core of the introduction, where you show the overall topic, purpose, your point of view, hypotheses and/or research questions (depending on what kind of paper it is).
3. The most specific information, describing the scope and structure of your paper.

If the main body of your paper follows a predictable template, such as the method, results and discussion stages of a report in the sciences, you generally don't need to include a guide to the structure in your introduction.
You should write your introduction after you know both your overall point of view (if it is a persuasive paper) and the whole structure of your paper. You should then revise the introduction when you have completed the main body. [1]

Paragraphs

Most academic writing is structured into paragraphs. It is helpful to think about each paragraph as a mini essay with a three-part structure:

- topic sentence (also known as introductory sentence)
- body of the paragraph
- concluding sentence (necessary for long paragraphs but otherwise optional).

The topic sentence introduces a general overview of the topic and the purpose of the paragraph. Depending on the length of the paragraph, this may be more than one sentence. The topic sentence answers the question 'what's the paragraph about?'.
The body of the paragraph develops this topic. It may elaborate directly on the topic sentence by giving definitions, classifications, explanations, contrasts, examples and evidence.

The final sentence in many, but not all, paragraphs is the concluding sentence. It does not present new information, but often either summarises or comments on the paragraph content. It can also provide a link, by showing how the paragraph links to the topic sentence of the next paragraph. The concluding sentence often answers the question 'so what?', by explaining how this paragraph relates back to the main topic.
You don't have to write all your paragraphs using this structure. For example, there are paragraphs with no topic sentence, or the topic is mentioned near the end of the paragraph. However, this is a clear and common structure that makes it easy for the reader to follow. [1]

Conclusions

The conclusion is closely related to the introduction and is often described as its 'mirror image'. This means that if the introduction begins with general information and ends with specific information, the conclusion moves in the opposite direction.
The conclusion usually [1]:

- begins by briefly summarising the main scope or structure of the paper
- confirms the topic that was given in the introduction. This may take the form of the aims of the paper, a thesis statement (point of view) or a research question/hypothesis and its answer/outcome.
- ends with a more general statement about how this topic relates to its context. This may take the form of an evaluation of the importance of the topic, implications for future research or a recommendation about theory or practice.

Most **journal-style scientific papers** are subdivided into the following sections: Title, Authors and Affiliation, Abstract, Introduction, Methods, Results, Discussion, Conclusion, Acknowledgments, and Literature Cited (References), which parallel the experimental process. [3]

The sections appear in a journal style paper in the following prescribed order:

Experimental process	**Section of Paper**
What did I do in a nutshell?	Abstract
What is the problem?	Introduction
How did I solve the problem?	Materials and Methods
What did I find out?	Results
What does it mean?	Discussion
Who helped me out?	Acknowledgments (optional)
Whose work did I refer to?	Literature Cited
Extra Information	Appendices (optional)

An **abstract** summarizes, in one paragraph (usually), the major aspects of the entire paper in the following prescribed sequence:

- the question(s) you investigated (or purpose), (from Introduction)
  - state the purpose very clearly in the first or second sentence.
- the experimental design and methods used, (from Methods)
  - clearly express the basic design of the study.
  - Name or briefly describe the basic methodology used without going into excessive detail - be sure to indicate the key techniques used.
- the major findings including key quantitative results, or trends (from Results)
  - report those results which answer the questions you were asking
  - identify trends, relative change or differences, etc.
- a brief summary of your interpretations and conclusions. (from Discussion)
  - clearly state the implications of the answers your results gave you. [3]

As regards the style, remember that the Abstract is only text. Use the active voice when possible, but much of it may require passive constructions. Write your Abstract using concise, but complete, sentences, and get to the point quickly. Use past tense. Maximum length should be 200-300 words, usually in a single paragraph.

The Abstract should not contain:

- lengthy background information,
- references to other literature,
- elliptical (i.e., ending with ...) or incomplete sentences,
- abbreviations or terms that may be confusing to readers,
- any sort of illustration, figure, or table, or references to them. [3]

The function of the **Introduction** is to:

- Establish the context of the work being reported. This is accomplished by discussing the relevant primary research literature (with citations) and summarizing our current understanding of the problem you are investigating;
- State the purpose of the work in the form of the hypothesis, question, or problem you investigated; and,
- Briefly explain your rationale and approach and, whenever possible, the possible outcomes your study can reveal.

Concerning the style, it is advisable to use the active voice as much as possible. Some use of first person is okay, but do not overdo it.

The structure of the Introduction can be thought of as an inverted triangle – the broadest part at the top representing the most general information and focusing down to the specific problem you studied. Organize the information to present the more general aspects of the topic early in the Introduction, then narrow toward

the more specific topical information that provides context, finally arriving at your statement of purpose and rationale. An additional tip for the introduction is that expressions such as "novel," "first time," "first ever," and "paradigm-changing" are not preferred; you should use them sparingly. [3, 4]

In the section variously called **Methods** or **Methods and Materials** you explain clearly how you carried out your study in the following general structure and organization:

- the organism(s) studied (plant, animal, human, etc.) and their pre-experiment handling and care, and when and where the study was carried out (only if location and time are important factors); note that the term "subject" is used only for human studies.
- if a field study, a description of the study site, including the significant physical and biological features, and precise location (latitude and longitude, map, etc);
- the experimental or sampling design (i.e., how the experiment or study was structured. E.g., controls, treatments, the variable(s) measured, how many samples were collected, replication, etc.);
- the protocol for collecting data, i.e., how the experimental procedures were carried out, and, how the data were analysed (qualitative analyses and/or statistical procedures used).

The style in this section should read as if you were verbally describing the conduct of the experiment. You may use the active voice to a certain extent, although this section requires more use of third person, passive constructions than others. Avoid use of the first person in this section. Remember to use the past tense throughout - the work being reported is done, and was performed in the past, not the future. [3]

The function of the **Results** section is to objectively present your key results, without interpretation, in an orderly and logical sequence using both text and illustrative materials (Tables and Figures). Summaries of the statistical analyses may appear either in the text (usually parenthetically) or in the relevant Tables or Figures (in the legend or as footnotes). The text of the Results section should be crafted to follow this sequence and highlight the evidence needed to answer the questions/hypotheses you investigated. Important negative results should be reported, too.
It is advised to write the text of the Results section concisely and objectively. The passive voice will likely dominate here, but use the active voice as much as possible. Use the past tense. Avoid repetitive paragraph structures. Do not interpret the data here. The transition into interpretive language can be a slippery slope. [3]

Simple rules to follow related to **Tables** and **Figures**:

- Each Table or Figure must include a brief description of the results being presented and other necessary information in a legend.
  - Table legends go above the Table; tables are read from top to bottom.
  - Figure legends go below the figure; figures are usually viewed from bottom to top.
- When referring to a Figure from the text, "Figure" is abbreviated as Fig., e.g., Fig. 1. Table is never abbreviated, e.g., Table 1. [3]

Some problems to avoid:

- Do not reiterate each value from a Figure or Table - only the key result or trends that each conveys.
- Do not present the same data in both a Table and Figure - this is considered redundant and a waste of space and energy. Decide which format best shows the result and go with it.
- Do not report raw data values when they can be summarized as means, percents, etc.
- Avoid devoting whole sentences to report a statistical outcome alone.
- In scientific studies, the use of the word *significant(ly)* implies that a statistical test was employed to make a decision about the data; in this case the test indicated a larger difference in mean heights than you would expect to get by chance alone. Limit the use of the word "significant" to this purpose only.

Always enter the appropriate **units** when reporting data or summary statistics.

- When including a measure of variability, place the unit after the error value, e.g., "...was 10 ± 2.3 m".
- Likewise place the unit after the last in a series of numbers all having the same unit. For example: "lengths of 5, 10, 15, and 20 m", or "no differences were observed after 2, 4, 6, or 8 min. of incubation". [4]

Also, you must pay attention to the use of decimals, lines, etc. (Figure 1)

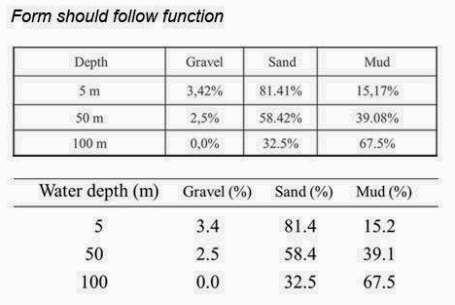

Figure 1. Inadequate use of lines, number of decimals, decimal separators (use always dots, not commas) and position of units (above) and its adequate use (below) for a clearer table (*Source: Borja, A., 2014*).

Statistical rules:

- Use mean and standard deviation to report normally distributed data.
- Use median and interpercentile range to report skewed data.
- For numbers, use two significant digits unless more precision is necessary (2.08, not 2.07856444).
- Never use percentages for very small samples e.g., "one out of two" should not be replaced by 50%. [4]

The function of the **Discussion** is to interpret your results in light of what was already known about the subject of the investigation, and to explain our new understanding of the problem after taking your results into consideration. The Discussion will always connect to the Introduction by way of the question(s) or hypotheses you posed and the literature you cited, but it does not simply repeat or rearrange the Introduction. Instead, it tells how your study has moved us forward from the place you left us at the end of the Introduction.
Regarding the style, use the active voice whenever possible in this section. Watch out for wordy phrases; be concise and make your points clearly. Use of the first person is okay, but too much use of the first person may actually distract the reader from the main points. [3]

The **Conclusion** shows how the work advances the field from the present state of knowledge. In some journals, it is a separate section; in others, it is the last paragraph of the Discussion section. Whatever the case, without a clear conclusion section, reviewers and readers will find it difficult to judge your work and whether it merits publication in the journal.
A common error in this section is repeating the abstract, or just listing experimental results. Trivial statements of your results are unacceptable in this section. You should provide a clear scientific justification for your work in this section, and indicate uses and extensions if appropriate. Moreover, you can suggest future experiments and point out those that are underway. [4]

Acknowledgments are included as needed. If, in your experiment, you received any significant help in thinking up, designing, or carrying out the work, or received materials from someone who did you a favour by supplying them, you must acknowledge their assistance and the service or material provided. Authors always acknowledge outside reviewers of their drafts and any sources of funding that supported the research. Although usual style requirements (e.g., 1st person, objectivity) are relaxed somewhat here, Acknowledgments are always brief and never flowery. [3]

The **Literature Cited** section gives an alphabetical listing (by first author's last name) of the references that you actually cited in the body of your paper. Do not label this section "Bibliography". A bibliography contains references that you

may have read but have not specifically cited in the text. Bibliography sections are found in books and other literary writing, but not scientific journal-style papers. You can use any software, such as EndNote or Mendeley, to format and include your references in the paper. [3]

Finally, keep in mind that each publisher has its own style guidelines and preferences, so always consult the publisher's Guide for Authors.

1.5 Grammar, spelling and vocabulary

It is important to use correct grammar, spelling and technical vocabulary in your university work. This will often be part of the marking criteria for your assignments.
If you are not confident in your grammar or spelling skills, there is a number of relevant online resources.
You can also attend specific workshops where you can learn strategies for paying close attention to grammar, proofreading or editing your work.
Building your technical vocabulary specific to your discipline takes time. You can improve your vocabulary by looking up technical words you come across in your readings or in class and noting down what they mean and how they are used. You should also look out for frequently occurring academic words, e.g.: 'analysis', 'aspect', 'factor' and 'discourse'. [1]
However, it is important to read first for the general meaning of the whole text. Looking up every new word will make it much slower and harder to understand.
If English is not your first language, there are English language courses, both on campus and off campus, as well as many books and online resources for learning more about English grammar. The best way to improve your use of English grammar is to spend as many hours each day as possible in English conversation. However, remember that formal written English is different to conversational English. [3]
The most general recommendations for writing a good paper in terms of grammar and spelling are as follows.
While writing a paper, always use proper grammar, spelling, and proper punctuations, use vocabulary skills, keep the introduction of the topic catching, interesting, and short, discuss the opinion and the matter in an organized and descriptive manner.
Some of the common mistakes in the paper writing format are [5]:

- Not using facts or quotes or similar cases
- The paper must be in easy language for better understanding
- The title of the paper must be catchy and clearly understandable
- No use of paragraphs
- Expressing personal views is fine but the author must never talk about himself/herself

The main points to keep in mind for the paper writing format are [5]:

- The topics of the papers should be unique and relevant
- The paper has to get attention
- It has to be interesting
- It has to be easy to read. Use subheadings to break up the text and make clear paragraphs. And make sure there is organisation to your ideas. The planning stage is vital for this. Since long, dense paragraphs can look overwhelming, it is a good idea to keep them on the shorter side. Paragraphs of about 3-4 sentences look visually appealing and can keep your reader interested.
- Find the main goal of writing a paper. The goal can be anything from providing information, advice or for comparing, etc.
- The introduction or the starting paragraph must be highly attentive.
- Use clear statements and make assertions
- Avoid repetition and over the top logic and reasons
- Use the style of paragraph writing and write the contents uniquely and unambiguously
- Avoid using the points which interest you only and not for the general public
- Write a good and logical ending

Usually, there are following Do's and Don'ts in paper writing [5]:

Do's	**Dont's**
Add the author's name	Write very lengthy papers
The heading of the paper should be short, clear and informative	The title should be lengthy and clear
Target the audience	Only the introduction and the conclusion should be attractive and attention seeker
The language and the style of writing should be according to the concerning readers	One can advise, suggest and give the solutions to a problem in any paragraph other than the starting one
Use proper punctuations	There must be only three paragraphs in a paper – introduction, middle one, and conclusion
Use Past Simple, Present Simple, Future Simple and Passive Voice	Use any tense, person, voice, many abbreviations, and self-made words

To make your article sound authoritative, you should choose sources that are accurate, current, and unbiased. If you're looking at sources online, check to see if you can find an author's name and the date the page was last updated. If you

can't find an author, it might be better to use a different source. An exception would be a wiki, which has multiple authors. If that's the case, just check to see if they used outside sources to back up the facts. Depending on the subject of your article, your source should be a few months to a few years old. Up to date information is typically the most accurate. [6]
Come back later if you experience writer's block. Writing is hard and creating something good can take time. If you find yourself struggling to find the right word or turn of phrase, take a break. Go for a walk or get a snack. This will allow your mind to take a break and will likely help you move past the writer's block. [7]
Louis George Alexander (1977) gave the following instructions for building up your paragraph [8]:

- Think carefully about what you are going to say before writing.
- The first sentence should give the reader some idea of what the paragraph is about.
- Write short, complete sentences.
- Keep to the subject.
- Take great care to connect your sentences so that your work reads smoothly. Words like 'but', 'since', 'although', 'after', 'afterwards', 'meanwhile' etc. will enable you to do this.
- Work neatly. Make sure your writing is clear, your spelling and punctuation correct and that there are margins to the left and right of your work.
- Abbreviations like 'don't', 'haven't', 'wouldn't' etc. are not normally used in written English. Write out the words in full: 'do not', 'have not', 'would not' etc.
- Never write your paragraph in your mother-tongue and then attempt to translate it into English.
- When you have finished, read your work through and try to correct mistakes you may have made in grammar.

The **title** must explain what the paper is broadly about. It is your first (and probably only) opportunity to attract the reader's attention. Hence, keep the title informative and concise (clear, descriptive, and not too long). You must avoid technical jargon and abbreviations, if possible.
Here you can see some examples of original titles, and how they were changed after reviews and comments to them [4]:

Example 1
Original title: Preliminary observations on the effect of salinity on benthic community distribution within an estuarine system, in the North Sea
Comments: Long title distracts readers. Remove all redundancies such as "studies on," "the nature of," etc. Never use expressions such as "preliminary." Be precise.

Revised title: Effect of salinity on benthic distribution within the Scheldt estuary (North Sea)

Example 2
Original title: Action of antibiotics on bacteria
Comments: Titles should be specific. Think about "how will I search for this piece of information" when you design the title.
Revised title: Inhibition of growth of Mycobacterium tuberculosis by streptomycin

Example 3
Original title: Fabrication of carbon/CdS coaxial nanofibers displaying optical and electrical properties via electrospinning carbon
Comments: "English needs help. The title is nonsense. All materials have properties of all varieties. You could examine my hair for its electrical and optical properties! You MUST be specific. I haven't read the paper but I suspect there is something special about these properties, otherwise why would you be reporting them?" – the Editor-in-Chief.
Revised title: Electrospinning of carbon/CdS coaxial nanofibers with optical and electrical properties

1.6 Editing and proofreading

Once you have written your assignment, it is important to edit and proofread your work.
Depending on the type of assignment and your process of writing, editing may involve:

- removing or adding text to meet the word limit
- making your sentences clearer and more concise
- restructuring paragraphs or sections
- making sure your ideas flow logically
- making sure you have provided enough background information
- adding in subheadings or sentences to clearly signpost the structure.

Once you have edited your work, proofread it. This involves checking spelling, grammar and references. [1]

Help editing and proofreading

There is no editing or proofreading service at the University. However, you can develop techniques to edit and proofread your own work.
If you are a postgraduate student, you can ask your lecturer for feedback on parts of your thesis. This would include advice on structure, clarity, expression, aspects of grammar, but does not involve editing and proofreading. If you want to use this

service, begin well before your submission date, as it aims to help you develop writing skills, not to fix up mistakes.

You can also use spell-checking software to catch any errors. If you write in a program like Microsoft Word, it should automatically check your document for basic errors. There are also several online software programs that can help you edit your writing. You can either copy and paste your article into one of these websites or add it as an extension on your browser. That way, the app can automatically proofread everything you write. [6]

Some popular tools include Google Translate, Grammarly, Ginger, ProWritingAid, and Hemingway. These tools can catch spelling errors, help correct your grammar, and can even help you make your writing more concise. [6, 9, 10]

It is better to read the paper multiple times to find flaws. Even though technology is helpful, do not rely on it completely. During the editing process, you need to read your own work carefully so that you can look for ways to improve. Maybe you need better transitions between topics or you forgot to cite a source. Software cannot help you catch those problems.

Read for different issues each time you look over your paper. For instance, the first time you might focus on catching stylistic errors. On your next read through, focus on making sure that you have the tone right. Read the paper out loud to yourself. This can help you hear phrases that do not sound quite right. [6]

A good idea is to ask a friend or family member for their opinion. It can boost your confidence if you get some feedback before publishing your paper. Ask a trusted friend or family member to look over your work. Just make sure that you are receptive to any constructive criticism that they offer.

After you are done reading and getting feedback, apply what you have learned. If your friend suggested that you add a personal example, this is the time to add that in. After you have corrected any errors and made sure that you are happy with your paper, you can submit it. [6]

The last piece of advice is to edit out unnecessary information. It can be really hard to make cuts to something you have worked hard on. But there are usually spots that you can trim down. Look for any repetition or any examples that are not that helpful. You can also look for places to make your writing more concise. So, e.g., instead of saying, "Because fall has nice crisp weather and many people like to watch football and eat pie, Thanksgiving has become a cherished tradition in the homes of many, many people," you could say, "Crisp weather, football, and pie are just a few reasons that people love Thanksgiving!" [6]

1.7 Evidence, plagiarism and referencing

Using evidence

Many types of university assignments are persuasive or critical. In these types of texts, you need to provide evidence to support your claims.

Different disciplines use different types of evidence. E.g., in arts disciplines, published sources are the main evidence, while science disciplines often use various types of empirical data (such as statistics or other experimental results) as the main evidence.
In addition to finding the right kind of evidence you need to evaluate the quality of evidence - not all pieces of evidence will be equally valuable for you to use. You should consider [1]:

- whether the evidence directly demonstrates support for a claim you are making. E.g., does it show that another scholar agrees with your argument, or that results confirm your interpretation?
- the reliability of the evidence. Is it published in a peer-reviewed journal or a book by a reputable publisher? Is the author someone who has expertise and status in the field? Has the data been obtained through a rigorous methodology, using an appropriate sample?
- if it meets the standards for good evidence in your discipline. E.g., in some disciplines, such as information technology, sources need to be quite recent, as publications that are two years old may already be out of date. In other disciplines, like philosophy, sources that are more than 200 years old may still be authoritative and relevant.

If you are not sure what type of evidence you should use, or what is good-quality evidence in your discipline, you could start by:

- checking the assignment instructions and any rubrics/marking guide/grade descriptors provided
- asking your lecturer/tutor for more information
- discussing it with other students
- looking at the type of evidence used in the readings for that unit of study. [1]

Plagiarism

By the definition of [1], plagiarism is using someone else's work as if it were your own. It is a type of academic dishonesty. Make sure you are familiar with what is considered plagiarism and what the consequences are.

Avoiding plagiarism

To avoid plagiarism, you need to be aware of what it is, and have good writing skills and referencing knowledge. You need to be able to:

- paraphrase and summarise
- know when to quote a source and when to paraphrase it
- link information from sources with your own ideas
- correctly use referencing conventions. [1]

When you quote a source, you use an extract exactly as it was used in/by the source. You indicate a quote by using quotation marks or indenting the text for long quotes.
When you paraphrase or summarise, you put the author's ideas in your own words. However, you still need to attribute the idea to the author by including a reference.
It is usually better to paraphrase than quote, as it shows a higher level of thinking, understanding and writing skills. To rephrase ideas, you need a large vocabulary of formal and technical words for the subject matter, as well as grammatical flexibility.
If you have a language background other than English, you can also work on these skills by spending as many hours per day as possible in English conversation. You can also study the vocabulary and grammar patterns used in the books and articles you are reading for your course. [1]

Referencing

In order to avoid plagiarism, you need to acknowledge your sources through referencing.
There are several different referencing conventions, also called citation styles, such as Harvard, American Psychological Association and MLA. The referencing convention you use depends on your discipline. [1]
You should be told which system to use by your lecturer, school, department and/or faculty at the beginning of the year or semester. You will be told either in a set of general guidelines, the outline for the unit of study or in the instructions for a particular assignment. Occasionally, you will be allowed to choose the citation style you prefer, as long as it is consistently used. If you are not sure which system to use, ask your lecturer.
If you have a lot of references, you can use software such as EndNote to automatically apply the right format to each reference. [1]

1.8 Resources and support

Additional help is available to help you further develop your writing skills.

- You can attend a specific workshop.
- Look at the relevant online resources.
- Ask your lecturer or tutor for feedback on your assignment draft. This allows you to make improvements before handing it in. Some markers will give feedback on a draft and some won't.
- During consultation hours for your lecturer or tutor, ask them for more feedback on your marked essay.
- Ask your lecturer or department if there are any examples of good essays to see what you are aiming for.

- Discuss your essay ideas, markers' feedback and your writing process with other students. [1]

Online resources

- ***Six Rules for Writing Good Articles*** https://medium.com/the-mission/six-rules-for-writing-good-articles-94f95be2ba3c
- ***How to Write an Article in 20 Minutes*** https://www.copyblogger.com/write-article-fast/
- ***Evaluating Internet Resources*** https://www.library.georgetown.edu/tutorials/research-guides/evaluating-internet-content
- ***Write site*** https://writesite.elearn.usyd.edu.au/ provides online support to help you develop your academic and professional writing skills. There are modules on grammar, using sources and structuring assignments.
- ***WRiSE*** (Writing a Report in Science and Engineering) http://learningcentre.usyd.edu.au/wrise/ is an online learning environment designed to help you develop and improve your report writing skills in science and engineering.
- ***Clearer writing*** http://learningcentre.usyd.edu.au/clearer_writing is an online interactive course to improve the clarity of your writing, with a particular focus on well-structured and coherent paragraphs.
- ***iWrite*** http://iwrite.sydney.edu.au/iwrite.html site contains interactive tutorials to help engineering students to improve their assignment writing across the undergraduate years. It is especially useful for students writing their third or fourth year thesis or project report.
- ***Reading in biology*** http://bugs.bio.usyd.edu.au/learning/resources/biology_reading/ is a resource covering the general and critical reading skills needed in preparation for writing a report.
- ***Academic Phrasebook*** http://www.phrasebank.manchester.ac.uk/ provides general phrases for academic writing and for writing sections or a research paper.
- ***Writing for a purpose*** http://learnenglish.britishcouncil.org/skills/writing/writing-purpose provides information on writing in the disciplines.

Scientific journals and conference proceedings of the relevant profile can also be a useful source for good examples of academic writing.
There are four most well-known **publishing portals**:

1. Elsevier www.elsevier.com
2. Springer www.springer.com
3. Wiley www.wiley.com
4. Taylor & Francis https://taylorandfrancis.com

Below are some **examples of the journals** with mainly environmental focus.

General Research

- Perspectives in Science https://www.sciencedirect.com/journal/perspectives-in-science
- Science Bulletin https://www.sciencedirect.com/journal/science-bulletin

Environmental Policy

- Environmental Innovation and Societal Transitions https://www.sciencedirect.com/journal/environmental-innovation-and-societal-transitions
- Environmental Science & Policy https://www.sciencedirect.com/journal/environmental-science-and-policy
- Global Environmental Change https://www.sciencedirect.com/journal/global-environmental-change
- Global Transitions https://www.sciencedirect.com/journal/global-transitions
- Journal of Environmental Policy & Planning https://www.tandfonline.com/toc/cjoe20/current
- Environment Systems and Decisions https://www.springer.com/journal/10669

Environmental Governance and Management

- Current Opinion in Environmental Sustainability https://www.sciencedirect.com/journal/current-opinion-in-environmental-sustainability
- Earth System Governance https://www.sciencedirect.com/journal/earth-system-governance
- Journal of Environmental Planning and Management https://www.tandfonline.com/toc/cjep20/current
- Ecosystem Services https://www.sciencedirect.com/journal/ecosystem-services
- Environmental and Sustainability Indicators https://www.sciencedirect.com/journal/environmental-and-sustainability-indicators
- Journal of Environmental Management https://www.sciencedirect.com/journal/journal-of-environmental-management
- Sustainable Environment Research https://www.sciencedirect.com/journal/sustainable-environment-research
- Sustainable Cities and Society https://www.sciencedirect.com/journal/sustainable-cities-and-society

- Urban Forestry & Urban Greening https://www.sciencedirect.com/journal/urban-forestry-and-urban-greening
- Waste Management https://www.sciencedirect.com/journal/waste-management

Environmental Science and Technology

- Environmental Development https://www.sciencedirect.com/journal/environmental-development
- Environmental Impact Assessment Review https://www.sciencedirect.com/journal/environmental-impact-assessment-review
- Environmental Nanotechnology, Monitoring & Management https://www.sciencedirect.com/journal/environmental-nanotechnology-monitoring-and-management
- Environmental Science and Ecotechnology https://www.sciencedirect.com/journal/environmental-science-and-ecotechnology
- Environmental Technology & Innovation https://www.sciencedirect.com/journal/environmental-technology-and-innovation
- Journal for Nature Conservation https://www.sciencedirect.com/journal/journal-for-nature-conservation
- International Journal of Environmental Studies https://www.tandfonline.com/toc/genv20/current
- Environmental Modeling & Assessment https://www.springer.com/journal/10666

Environmental Pollution

- Atmospheric Pollution Research https://www.sciencedirect.com/journal/atmospheric-pollution-research
- Ecotoxicology and Environmental Safety https://www.sciencedirect.com/journal/ecotoxicology-and-environmental-safety
- Environmental Pollution https://www.sciencedirect.com/journal/environmental-pollution
- Environmental Science and Pollution Research https://www.springer.com/journal/11356

Earth Science

- Atmospheric Environment https://www.sciencedirect.com/journal/atmospheric-environment

- Earth and Planetary Science Letters https://www.sciencedirect.com/journal/earth-and-planetary-science-letters
- Geoscience Frontiers https://www.sciencedirect.com/journal/geoscience-frontiers
- Earth Systems and Environment https://www.springer.com/journal/41748
- Mitigation and Adaptation Strategies for Global Change https://www.springer.com/journal/11027
- Regional Environmental Change https://www.springer.com/journal/10113
- International Soil and Water Conservation Research https://www.sciencedirect.com/journal/international-soil-and-water-conservation-research
- Urban Climate https://www.sciencedirect.com/journal/urban-climate
- Water Security https://www.sciencedirect.com/journal/water-security
- The journals published by American Meteorological Society journals.ametsoc.org/
- The journals published by European Geosciences Union https://www.egu.eu/publications/open-access-journals/

Geoinformation Issues

- International Journal of Applied Earth Observation and Geoinformation https://www.sciencedirect.com/journal/international-journal-of-applied-earth-observation-and-geoinformation
- Remote Sensing of Environment https://www.sciencedirect.com/journal/remote-sensing-of-environment
- Remote Sensing in Earth Systems Sciences https://www.springer.com/journal/41976
- PFG – Journal of Photogrammetry, Remote Sensing and Geoinformation Science https://www.springer.com/journal/41064

Self-Control Questions for Part 1

1. What kind of language you should not use for academic writing?
   a) Formal language
   b) Objective language
   c) Informal language
   d) Technical language
2. What type of academic writing includes such instructions as: 'analyse', 'compare', 'contrast', 'relate', and 'examine'?
   a) Descriptive
   b) Analytical
   c) Critical
   d) Persuasive
3. What type of academic writing includes such instructions as: 'argue', 'evaluate', 'discuss', and 'take a position'?
   a) Descriptive
   b) Analytical
   c) Critical
   d) Persuasive
4. What type of academic writing requires you to consider at least two points of view, including your own?
   a) Descriptive
   b) Analytical
   c) Critical
   d) Persuasive
5. What is the first thing you need to do to write your paper?
   a) analysing data
   b) drafting
   c) a library database search to find relevant journal articles or books
   d) editing and proofreading
6. What type of written work has the most complex structure?
   a) an essay
   b) a report
   c) a critical review
   d) a scientific paper
7. What is the first part of a paragraph called?
   a) heading
   b) body
   c) topic sentence
   d) concluding sentence
8. List the sections in a journal style paper in the prescribed order.
   a) Abstract
   b) Introduction

c) Materials and Methods
d) Results
e) Discussion

9. What should the Abstract contain?
   a) concise, but complete, sentences
   b) lengthy background information
   c) references to other literature
   d) abbreviations
10. What style is advisable to be used in the Introduction?
   a) the passive voice
   b) the active voice
   c) the first person
11. What style is preferable in the Materials and Methods?
   a) the first person
   b) the active voice
   c) the third person and passive constructions
12. How are Figures and Tables abbreviated in the text correctly?
   a) Figure 1, Tab. 1
   b) Fig. 1, Table 1
   c) Fig. 1, Tab. 1
   d) Figure 1, Table 1
13. What you should not do in paper writing?
   a) Write very lengthy papers
   b) Target the audience
   c) Use proper punctuations
   d) Use Passive Voice
14. What are the general requirements for paper writing?
   a) The title should be lengthy and clear
   b) Only the introduction and the conclusion should be attractive and attention seeker
   c) The heading of the paper should be short, clear and informative
   d) There must be only three paragraphs in a paper – introduction, middle one, and conclusion
15. Which words are not normally used in written English?
   a) since, although, afterwards
   b) but, after, meanwhile
   c) do not, have not, would not
   d) don’t, haven’t, wouldn’t
16. What does proofreading involve?
   a) removing or adding text to meet the word limit
   b) making your sentences clearer and more concise
   c) checking spelling, grammar and references
   d) restructuring paragraphs or sections

17. What are the best techniques to edit and proofread your own work?
    a) ask your lecturer or friend for feedback
    b) use spell-checking software
    c) read the paper multiple times to find flaws
    d) combine all the listed approaches
18. How do you call using someone else's work as if it were your own?
    a) referencing
    b) plagiarism
    c) using evidence
    d) editing
19. What software can you use to automatically apply the right format to each reference?
    a) EndNote
    b) Grammarly
    c) Ginger
    d) ProWritingAid
20. What resources are available to help you develop your writing skills?
    a) a specific workshop
    b) the relevant online resources
    c) feedback from your lecturer or tutor
    d) all of the mentioned

Individual assignment 1

Using the recommendations given above, write a scientific paper (an abstract of the report) in English of 1-2 pages

Part 2 Academic Presentations

2.1 Types of academic presentations

A presentation is any situation which involves speaking to a group of people in order to make a point, educate or share information. Many presentations also have some form of supporting visual aid such as slides, a whiteboard, projections or flip charts.

By the purpose, the following main types of presentations can be distinguished:
1. **Informative presentations** are brief and to the point. They generally stick to the facts and avoid complicated information. These presentations are usually used to describe facts (intended for other experts), organized from most important topic to least, and best for breaking big information down into small. Examples include university lectures, school classes, and research results. [11]
2. **Instructional presentations** give specific directions or orders. They are designed to teach something completely new to the audience. These presentations are very thorough, and usually take a long time, cover all the theory and knowledge from the basic steps to checking the audience's understanding. Examples include tutorial classes, safety demonstrations, and instructional videos. [11]
3. **Arousing presentations** are designed to make the audience consider the topic or discussion, as well as to rouse interest and emotions to make audience receptive. Such presentation usually involves a lot of powerful language and enthusiastic discussion, often uses stories or real-life examples of the topic to rouse interest, and can describe a solution to a problem – and gain audience's approval. Examples include a debate, church sermon or motivational speech. [11]
4. **Persuasive presentations** aim to make listeners accept and agree with the presenter's proposal. They are very persuasive, usually showing supporting facts and advantages to reinforce credibility, and often highly emotional – they help to gather support and approval. Such presentation presents problem, the presenter's solution, and all the reasons behind it for agreement. Example include political debates, business proposals. [11]
5. **Decision-making presentations** are designed to convince listeners to act on the presenter's proposal – usually by giving evidence and pointing out what can happen if this is not done. These presentations can include a description of a problem that the audience/society/certain people face and examples. Presenters often compare the two predictions about what will happen if the listeners do or don't do what they suggest. Example include business meetings, bank promotions, and law discussion in the government. [11]

Academic presentations take the same form, but the purpose can be very different.

There are many different types of academic and research presentations, but the different types of presentations can be divided into two general categories: written presentations and oral presentations. Written presentations include dissertations and theses, posters, grant and project proposals, blogs, websites, PowerPoint slides, etc. Oral presentations include lectures, conference presentations, job talks, etc. Often, oral and written methods of presentation are combined to effectively convey information about research. E.g., posters or PowerPoint slides may be used to support oral presentations of research, or information on posters may be supplemented with oral explanations. Whichever type of research presentation you choose for your research, you should remember the following about the similarities and differences between oral and written presentations. [12]

The fundamental elements of successfully presenting research apply to both oral and written presentations. Whether you choose to present your research orally or in written form, you should know and actively engage your audience in the presentation of your research to effectively deliver your ideas. Organization is also important in both written and oral presentations. You can create outlines of your research that you can use to help you organize information for both oral and written presentations.

The most important difference between oral and written presentations is the time that is available for your audience to process what you have presented about your research. In written presentations, your audience has an unlimited amount of time to read, re-read, and analyse your research; if your audience does not understand particularly dense elements of your research, your audience has plenty of time to mull over your research until it becomes more understandable. In oral presentations, however, you generally have a limited amount of time to present your research, and your audience has even less time to understand what you have said. In both oral and written presentations (but particularly in oral presentations), you can help your audience understand your research by defining important key terms. After you have defined the key terms for your written or oral presentation, you must use them and any other jargon consistently throughout your entire presentation to help your audience avoid confusion. [12]

Therefore, if academic presentations represent an oral examination, when assessing your performance your lecturer will be looking for:

- Understanding of the topic and the audience
- Appropriate breadth and depth
- An argument in the content
- A clear structure: a distinct beginning, middle and end
- Suitable visual aids
- Evidence of having practised the talk
- Proper timing/length

As with all academic skills, academic presentation skills can be learnt and continually improved through practise.

2.2 Planning a presentation

One way of tackling a presentation is to divide it into three easy stages:

1 Planning
2 Preparing
3 Presenting

Each stage should inform the other to ensure an ordered, appropriate presentation, offered in a confident manner.

Thorough planning will enable you to present your views in a considerate and logical way [13]. Three key factors should be addressed when planning your presentation:

- Purpose
- Audience
- Location

Purpose of the presentation

Focus: When you plan your presentation, concentrate on what is really important. What is the exact problem? What is it you need to achieve by the end of it? Set these down as objectives.

Objective(s): Establish your objectives and how you are going to achieve them. All your emphasis should be placed on these objectives throughout the presentation, and influence every aspect of the presentation.

To determine your objectives, decide what you feel your audience must know, think or do at the end of your presentation. Perhaps finishing the statement below will help you focus:

As a result of my presentation, my audience will...

Simplify: Support your main idea with a few examples, and their relevance to the overall aim.

Organise: Structure your overall presentation from the following outline:

- State the main issue
- Develop your viewpoint with specifics
- End with a clear summary and/or a last statement or request
- Handle any questions

Dramatise: Do not just tell it, show it. Find a vivid, memorable way to get your point across. Use visual aids such as graphs, handouts, charts, and/or media.

Humanise: Remember you are speaking to people, try to project outward, not inward, by thinking of ways that will engage your audience. [13]

Audience

The type of audience might well influence the format of your presentation and its content, e.g., a technical presentation to a specialist audience might be more formal than one to a discussion group. Ask yourself the following questions about your intended audience [13]:

- Who are they?
- What are their reasons for attending?
- How many are likely to be present?
- What sort of people – age, education, status?
- What do they already know about the subject?
- What are their likely attitudes/biases?

The answers to these questions will affect both the style and the content of your talk.

Location

Another important aspect of planning concerns the location. This can have significant implications for how you plan your content and organise yourself. If you have access to the venue, it might help to pay an early visit. The aspects you might want to check include:

- type and size of room
- seating arrangements – fixed or movable
- position of speaker (you)
- equipment available, e.g. whiteboard, projector, OHP, flip chart, tape recorder
- acoustics (sound)
- facilities for special needs

Do not forget, your plan should help you tailor your information to your audience, to decide what degree of specialist knowledge is required, the order in which you present it and what might affect how you can deliver your presentation. [13] The next stage, preparing, is the time you organise and make your content come to life.

2.3 Preparing a presentation

RULE 1: Content is the most important part of your presentation.
RULE 2: The visuals should enhance not detract from your presentation.

A clear structure will allow the audience to understand your main themes. To aid this, break your presentation down into three sections: Introduction, Main Body and Conclusion. [13]

The order whilst presenting:

1. Introduction	2. Main Body	3. Conclusion
Set the scene, outline your objectives	Explain your main findings	Summarise each point made
Tell them what you are going to tell them	Tell them	Tell them what you just told them

Consider working in a 3 – 1 – 2 order when preparing your presentation:

3. Conclusion	1. Introduction	2. Main Body
Work backwards from your overall conclusions to ensure all concluding statements are supported throughout the presentation.	Prime your audience for what is to come and mention the key areas that you will be developing throughout the presentation.	Expand each of your key points in order that the concluding statements are justified.

Conclusion

The conclusion is as equally important as the introduction and should not be rushed. Common pitfalls are running out of time, speeding up, mumbling and fading off, or ending abruptly. If the ending is weak it will affect what the audience think of the overall presentation. Prepare an ending (or end slide) that:

- Sums up the whole presentation,
- Does not wander around the subject,
- Does not introduce any new ideas,
- Does not keep repeating points over and over again. [13]

Introduction

Your introduction will need to create an immediate impression and gain the attention of the audience. Therefore, it is very important to be clear about what message you are trying to relay from the outset. You will need to outline enough information for the audience to understand the context of the subject; break down any key terms or concepts that you will be discussing; and outline the sequence of your material. Generally, you need to identify up to three objectives and these need to be stated early in the presentation so that your audience can follow the development of your argument/discussion.

Right from the start! - Why not ask your audience what they already know about your topic and use this as link to your starting point? This way you will be tapping into the prior knowledge of the audience and you will be giving them a sense of involvement from the outset. [13]

Main body

The middle part of your presentation is where the bulk of your research is relayed. **The quality of the research is critical -** The topic should be thoroughly researched, with a number of different sources. Make sure visual images are appropriate to the point(s) you wish to make, and be sure that you know the specifics on each image.
Organisation and transitions make or break a presentation - There should be a logical flow from beginning to end, like in written work. Avoid jumping from one point to another, and be careful about adding information that is not directly related to the main theme. Creating an outline before you begin creating actual slides can be helpful. [13]

2.4 Visual Aids

When to use a visual aid

Visual aids are items of a visual manner, such as graphs, photographs, video clips etc. used in addition to spoken information.
There are a variety of different types of visual aids, you must decide which will suit your presentation and your audience. [14]
Microsoft **PowerPoint** is widely used for presentations because it is easy to create attractive and professional presentations and it is simple to modify and reorganise content compared to other visual aids. You can insert a range of visual items into the slides which will improve the audience's focus. Also, the audience can generally see slideshows better than other visual aids and you don't have to face away from them. However, your presentation can look unprofessional if this software is used poorly.
Whiteboards are great for providing further explanations, such as, showing the order of a process, creating diagrams or explaining complex words or phrases. They are often used to display headings and write down audience suggestions. Whiteboards are also ideal for displaying important information for the entire duration of the presentation, such as, key definitions, because the audience can just glance at the whiteboard for a reminder. [14]
Handouts are papers that contain key information from your presentation or they may provide further information. They prevent you from overwhelming the audience as there will be less information on the slides and therefore less information they need to write down. Providing the audience with graphs and charts beforehand is also beneficial because the audience will find them easier to read than, e.g., from a slide. [14]
Using **video clips** are a great wait to engage the audience and increase their interest. Use video to bring motion, images and audio into your presentation.

Flip charts offer a low cost and low technology solution to record and convey information as you speak. They're more beneficial for smaller audiences and they are favoured for brainstorming sessions as you can gather ideas easily. Flip charts are also widely used for summarising information and, like with a whiteboard, you can use them to show permanent background information. [14]

Poster boards can be created using a variety of visual devices, such as graphs and images. They are generally quite portable and you can make them as elaborate as you want. However, they can be expensive to produce if the poster is quite complex.

Product, objects or artefacts can be useful tools for making an impact or even for making a dull topic more interesting. Sometimes they will be needed for technical and practical reasons, such as, showing a model or conducting an experiment. [14]

The decision about if and when to use a visual aid depends to a certain extent on the occasion and the constraints imposed by the situation. If you are reading a seminar paper, for instance, you are likely to be sitting at a table surrounded by the group, and it may be quite difficult to leave your place and move to an overhead projector. If you have several visual aids to show, you might want to group them, if possible, so that the interruption happens only once. You may decide that a handout, with a copy for each person, is much easier to use than a more formal visual aid. [15]

On the other hand, a seminar presentation, when the presentation techniques themselves are being assessed as well as the treatment of the subject, might well be an occasion for using a number of visual aids. If you are studying science or engineering, you will almost certainly rely heavily on visual aids, and you will be assessed on these as well as on other aspects of your work. A poster presentation, for instance, will involve you in the design and use of high-quality posters, while a project presentation will require you to illustrate your work regularly throughout your talk. [15]

Visual aids preliminary checklist

You are preparing a presentation and trying to decide which visual aids you will use. Consider the following:

- What equipment is available?
- Do you know how to order it and, if necessary, collect it and set it up?
- What visual aids will other speakers be using?
- Is the room suitable for visual aids, in terms of size, lighting, blinds and so on?
- How long is your talk? This will to a certain extent dictate the number of visual aids you use.
- If you are using a data or overhead projector, what colours will you use for background, lettering and so on? Will you have a coloured background?
- Will you have an introductory slide, with your subject and your name on it?

- Will you show a bullet point list of the contents of your talk?
- At which points of your presentation will you and the audience need to see a diagram or other illustration? Do you want a summary slide at the end?
- Allow at least 20 seconds per slide; how will this affect the amount of information you can give the audience?
- Do you need to reproduce any of your slides as handouts to give to the audience or the person marking the assignment?
- If your chosen equipment fails, what will you use as backup? This is particularly important if you are using a data projector. [15, 16]

Designing a visual aid

Whatever form of visual aid you choose, there is one overriding criterion: everyone in the audience must be able to see everything you show. This sounds obvious, but inexperienced speakers sometimes crowd their material on the screen, whether it is words or diagrams, until it is impossible for the audience to see the details. Let us look first at the potential problems of words and then at punctuation, colour and backgrounds. [15]

Font size and style

There is not space on a screen for many words if they are a sensible size for viewing. In a seminar room, you can probably use a font of about 20 point and the audience will be able to read the words; in a large lecture theatre, you may need 30 point or even bigger. This means, incidentally, that it is not wise to copy printed material onto acetate for use with the overhead projector: almost certainly, the print size will be 12 point, far too small to be read even by people sitting near the front. There is also likely to be too much on the page.

There is another consideration, which is the style of font you choose. If you look at one of the most common fonts for documents, Times New Roman, you will see that the letters are smaller than in some other fonts and have serifs, the small extra strokes or curls at the edges of the letters. These help the reading and look attractive on the page. However, a visual aid needs to be as simple and uncluttered as possible, so a sanserif font, in which the letters do not have the serifs, is clearer when it is projected. Arial is a good choice. [15, 17]

You may want to make a heading look more interesting by using ‘shadowed’ or outline letters, or a more elaborate font. Be careful! It is easy to make your visual aid harder to read, or even oddly childish, by overdoing such techniques. Generally speaking, for your headings use large bold capitals in the font you are using already, perhaps in a different colour from the rest of the text, and they will stand out sufficiently.

25 words on the screen is a reasonable number to use as a guideline. This might include four or five words used as a heading, and the rest as a list of points

underneath. Bulleted points are usually better than numbered, as they make more visual impact, although there are times, of course, when numbers are needed. If you need to use them, do not add brackets or full stops: the numbers by themselves will be clear enough if they are well spaced, and again, you want to avoid clutter. [15]

Selecting the words

Try not to use full sentences on the screen, and never show a long paragraph of writing. You are producing visual material, not a written text, and you must therefore show only what the audience can read easily, which means the minimum of words necessary to give the message.
For instance, suppose you are a history student, and have been asked to give a seminar. You might want to give your group the following information in visual form, to reinforce your message:

> The Abbey Church of Cluny was founded in 1088. It was the largest Romanesque building in Western Europe, and its architecture and decoration were enormously influential. It became immensely rich and politically powerful, because of its independence and the eminence and capability of its abbots.

There are 45 words in this paragraph, far too many to put on the screen. This doesn't matter, though, as you are going to tell your audience the details, and all you need to show them are bullet points to focus their attention. You could use a heading with a list of points under it, as shown below. [15]

Abbey Church of Cluny

Founded 1088

- Huge size and fine architecture
- Capable, influential abbots
- Enormous wealth
- Independence and political power

You now have just 19 words and one date on the screen, so you can use a sensible style and size of font in order to project these key ideas. You will see that you have identified the most important words for your audience, so they can concentrate on what you say rather than having to worry about exactly what your message might be. These are important aspects of the speaker's responsibility: clarifying issues and highlighting key ideas for those who listen. [15, 17]

Punctuation

You'll also have noticed that there is no punctuation in the visual aid version of the example above, although the original passage has normal full stops and commas. Very little punctuation is needed on a visual aid, partly because there will not often be complete sentences and partly because we are simplifying and removing anything which might be thought of as 'clutter'. A few punctuation marks should be used if they are appropriate, for instance a direct question that is not followed by a question mark always looks wrong, and apostrophes should be used correctly in the normal way. On the other hand, a list does not have to be introduced by a colon, and it is rare to need commas unless they affect the meaning of the words. In other words, leave punctuation out unless the result looks odd or is ambiguous. [15]

Colour on the screen

You have a choice between using a dark colour for the background and a light colour for text, or doing the opposite: a light background will allow dark coloured text to be highlighted. In practice, it is a bit more complicated. It is essential that the contrast between background and text (or diagrammatic material) is sufficient, but this is not always clear from the computer screen. This is especially true if you use two shades of the same colour: dark blue text on a light blue background can be effective, but you need to project it to be sure that the letters stand out clearly. Clashing colours, or an unpleasant mix, will distract the audience from important information. A popular colour choice is a dark blue background with white or yellow for the text: this works well and looks attractive.

Once you have chosen your basic colour scheme, do not depart from it without a good reason. Consistency is also important, especially if you are part of a group presentation. If one of you uses red for a particular section of a map, for instance, then everyone who shows the same area must use red.

Colour can cause problems, too, especially for the high percentage of men who have some colour deficiency in their sight. Obviously, you cannot make allowances for the small number who are totally colour blind, but there are some combinations which often present difficulty and which you need to avoid: red and green is the most common. Such problems of colour recognition are, oddly, rare among women. Some colours simply do not show up well: pink and orange are in this category, while green can look faded and needs to be used with care. A patch of red is effective, but writing or fine line drawing in red simply does not project sufficiently strongly. Black always projects well, with dark blue almost as good, and brown and purple are generally easy to see. [15, 17]

Once you have a colour combination you are happy with, you can use it whenever you like. If you are using PowerPoint, you can copy your master slide, with its

colours, into a new presentation, and you have your chosen colours readily available.

Backgrounds

We have discussed background colours above, but you may like the look of some of the patterned backgrounds available on PowerPoint or similar packages. They need to be chosen carefully, in the light of your main message. Some standard backgrounds contain their own traps for the indiscriminate user. If, for example, you choose one which is pale in colour at the top and progressively darker down the screen, you are faced with a quandary: do you use light coloured print, which disappears at the top but shows up well lower down, or a dark print that looks splendid at the top but is hardly visible towards the bottom? Unintended emphasis can occur with any background that has patterns on it.
The overall advice that comes out of a discussion of backgrounds is that, on the whole, a plain colour is safest, and the more technical or scientific the content of your image, the more important it is that nothing should distract from it or distort its message. [15]

Visual aids checklist

Take any one of your visual aids, project it and test it in the light of the following questions. Before you give your presentation, check all your visual aids this way [15]:

- If a colleague stands at the back of the room, can he or she see every detail on the screen?
- Is there material which is irrelevant and should be removed (such as a slide number or the source of a diagram)?
- Does the slide need to be corrected (for instance because of a spelling error) or updated (for instance because a statistic has been superseded)?
- Is there unnecessary punctuation on the slide?
- Has any essential punctuation been left out?
- Is the colour combination pleasing to look at?
- Has the message been distorted because of the background or layout of the slide?
- Is every diagram correctly and clearly labelled?
- Have you shown more detail than the audience can easily follow?
- Is all the lettering big enough to be easily read?
- Are there too many words on the screen?
- Have you shown long sentences or paragraphs which are difficult to read?
- Is this slide consistent in style and layout with any others that you will use?
- Overall, is your message clear, easy to understand and attractively presented?

Visual aid equipment

Remember, that you need to have the equipment available for rehearsal as well as for the performance. Adequate rehearsal is essential. Too often, people practise the talk itself, but leave preparation of the visuals until the last minute; they may even look slightly surprised in front of the audience when they see the final version on the screen for the first time. You need to know exactly what the enlarged image looks like and where to find the detail, so that you can use the pointer easily as you indicate on the screen what the audience should be looking at.

A useful guide is to realise that, for most of any talk, your feet should be pointing towards the audience. If they are, you will be facing the people you are talking to. There will be times when your feet will move round 90 degrees, so that you are sideways on to the audience, for instance when you are using material on the screen, but as soon as you have finished working through the words or diagram there, make sure that your feet turn again to their usual position and you are facing your audience.

Visual aids are important to any speaker, but they must not detract from you, the person the audience has come to see and hear. Nevertheless, they need careful preparation and their use has to be planned and rehearsed. [15]

2.5 Presenting

Academic presentations are not always in formal settings; sometimes they take place in classrooms in front of small groups of fellow students. Whatever the situation, they should be viewed as an important opportunity to sell your knowledge in a professional way. [13]

The delivery

As a presenter, consider the following practical issues:

- Do not simply read the text from the slides without any of your own words. Remember the audience can read!
- Consider whether sitting or standing is most appropriate – standing is preferable, but for group presentations, sometimes non-speakers may prefer to sit, whilst only the lead speaker stands.
- Do not fold your arms or put your hands in your pocket
- Use cue cards as memory aids. Try to keep them small so that they can be held in one hand, and not read like a script. The audience does not want to see the top of your head for the whole of the presentation.
- Do not fumble with the equipment or furniture

– Always have a duplicate of your presentation or a spare copy with you in the event of unplanned problems – for example, equipment that does not work, saving devices show errors, a sudden change of venue. [13]

With regard to preferred personal qualities:
– Open body language – hands at your side or bent at the elbow in front of your body.
– Look at the audience – do not fix your stare, but glance around in a casual manner.
– Smile
– Clear, even tone of voice – neither hushed nor too loud for the size of the room, or how many people are present. A low tone is preferable for small numbers; greater projection is required for greater numbers, in larger rooms.
– Try to avoid using too many gestures or repetition of certain words or phrases e.g. 'you know', 'and so on and so forth' 'and I really mean this' 'umm' 'err'
– Be enthusiastic but do not get too excited about what you are saying and start going off the subject. Bullet points can help you, and the audience, stay focussed and avoid a verbal assault. [13, 18]

Visual aids will help to illustrate your presentation, but effective use of visual aids requires planning and preparation; you need to be selective so as not to overwhelm your audience. Visual aids should enhance your spoken message and if used appropriately can be very effective. Pictures, drawings, and photographs have the potential to make an audience ***feel*** the way you do. Verbal material, including models, diagrams, and copies of statistics help your audience ***think*** the way you do.

Therefore
- Do not use overcomplicated visual aids – they can confuse the audience, and might add to your nervousness if you have to do and say a number of things at the same time.
- Visual aids should help the audience recall a concept.
- Visual aids must complement what you say.
- Do not have a visual aid that you do not need.
- Avoid too much material in too little time.
- If you are using visual aids such as OHPs, models, video, DVD, props and so on, familiarise yourself with how they work, and where they will be positioned in connection to you as the speaker.
- Edit and proofread all visual or written material – Make sure there are no spelling mistakes and spell authors' names correctly. [13, 16]

For PowerPoint slides:

- Check your timing. On average, use three slides per minute as a maximum.
- Use text sparingly. If your audience is concentrating on written text, they are less likely to give you their complete attention. Think Bullets!
- The “joy of six” is a helpful rule of thumb. Use a maximum of six points per slide and six words per point.
- Depending on the colour and font size you select, text may be difficult to read. Font size is important - use the "floor test" for readability. Print out a slide containing text, and place the page on the floor. Can you read the slide from a standing position? If yes, then your audience can likely read it from their seats. If no, then the font size needs to be increased. If possible, preview your presentation in the room you will be using or one that is similar. Be sure to check the view from the rear of the room.
- Select colours with care. Lighting and distance will affect colour choice. Experiment with colour combinations, but make sure they work well on a screen. Often there is a difference between how something looks on your computer screen and how it appears when projected onto a screen or wall. Make every effort to preview your presentation ahead of time.
- Visual images (from the internet or Clipart) can be great, but they need to be carefully selected and be appropriate to the point(s) being made. Do not use images just for the sake of using an image. Check the size of images to make sure they are not distracting, and certainly that they are not distorted.
- Use one design style for the entire presentation. Using one, or several, of the master slides provided in PowerPoint can help ensure this is not a problem.
- Minimize or avoid animated texts, sounds, and fancy transitions. These can be effective in certain situations, but most are not appropriate to academic presentations as often distract your audience from the main points you are trying to make.
- Avoid switching between programs (such as calling up a Web page). This takes extra time and can make it difficult for your audience to remain focused on your presentation.
- Consider whether you want people to take notes during your presentation? If yes, then allow some time to do so. It is also helpful to print a notes page so that notes may be recorded alongside the related slide. [13, 19]

Nerves

Remember you are not alone, even the most practised presenter will suffer from nervousness. The following suggestions can help to relieve feelings of anxiety:

– Try some relaxation exercises. Sit up, breathe in for a count of one and out for a count of four; keep this going for five minutes whilst just concentrating on the counting and rhythm of your breathing
– Practise your presentation a few times before the actual event. Repetition will help you remember actions, timings and crucial sections more easily than passively reading the content on paper or a screen.
– Mentally rehearse if you are unable to physically rehearse. Visualise yourself speaking, your body language, what you have to do when; Try to picture the sequence of the presentation to get an idea of the flow of the material, and how you can help the audience understand the most important points. Know your subject!
– Before you get to the presentation do not cram at the last moment. Try to do something enjoyable and unrelated to the upcoming event. [13, 18, 19]

2.6 Problems and questions

Giving a talk can be daunting. If you have a spoken presentation to give, with or without slides, make sure you have time to rehearse it several times.
Firstly, this is really good at helping you overcome any nerves as you will know exactly what you are going to say. It will build your confidence.
Saying something aloud is a really effective way to check for sense, structure and flow. If it is difficult to say, or does not sound right, then the audience may find it difficult to follow what you are trying to say.
Finally, practising helps you know how long it takes. If your presentation is being assessed, you may be penalised for going over time as that would be unfair to other presenters (it is like going over your word count). [20]
If you can, find out what resources and equipment you will have when you present. It is usually expected that presenters will wear or use a microphone so that everyone can hear. Also think about how you are going to use your visual material. [20]
As the presenter, it is your responsibility to make the presentation as accessible for your audience as possible. Some audience members may have visual or hearing impairments. There are special resources on how to use the software and on designing accessible presentations.

Question and answer session is as important as the rest of the presentation sessions. The general recommendations [13] are as follows:
– Prepare for questions - Anticipate questions and be prepared to respond to them – not just with more information but with real and relevant examples.
– Do not rush your answer(s)
– Repeat questions, or ask for the question to be repeated, if you need time to think of the appropriate response.

- If you have no idea how to answer a particular question, it would be better to state this clearly and ask to move on to another question. You might also try “This wasn’t something that I looked at … but I could find the information and get back to you if you want to speak to me after the presentation or leave your contact details”.
- If a question has been asked that is outside the scope of your objectives, you might say “I did not cover that area“ or “For this presentation, I had to relate X to Y, but if you feel Z is an area I need to look at, I will do so in the future”.

Handling questions

- Always repeat each question so the entire audience knows what you have been asked.
- Always be respectful! Even if the question is way off, address it the best you can and try to add something interesting to the response, even if it is more than the person was asking.
- Avoid long one-on-one discussions, especially arguments.
  “This is a very interesting conversation, maybe we can discuss it further after the seminar...”
- Finish your answer by asking the person who asked that question whether or not you answered the question sufficiently for them.

If you cannot answer a few of the questions, it is all right, do not apologize.
“That's a very good question. We hadn't thought of that before...”

- Offer to research an answer, then get back to the questioner later.
- Suggest resources which would help the questioner to address the question themselves.
- Ask for suggestions from the audience. [21]

2.7 Concluding

No matter how good a slideshow is, a poor presenter can ruin it for the audience. The challenge is to appear relaxed and professional even if you do not yet feel it. Follow these top tips to become a confident and compelling speaker [22]:

1. Do not read your slides

Surveys have shown that presenters reading their slides is the number one most hated thing about PowerPoint presentations. Don't do it - use small cue cards if you need them. Reducing the amount of text on your slides will also make this less likely to happen. If you have a lot of text on a slide then give your audience a chance to read it themselves before continuing.

2. If possible, use a remote device for advancing your slides

This allows you to move out from behind the computer and/or lectern and enables you to connect to your audience. Standing behind the computer creates an unnecessary barrier between you and them.

3. Know your material and discard the notes when you can

There is no quick fix for learning your material, you just have to get your head down and do it. Ideally, all you should need is a quick glance at the slide (or some cue cards) and you should know what you want to say to explain your point. Nervous and new presenters are clearly going to struggle with this - but don't panic, use notes to begin with (the briefer the better) and eventually you will grow in confidence and be able to discard them completely.

4. Rehearse, rehearse, rehearse

Even experienced, professional speakers rehearse their narration. Two or three times sitting in front of the computer, and then at least once in a room, where you can stand up and have it on a screen behind you, are recommended. Even when you are at the computer, saying it out loud is important. You may feel a bit self-conscious but the computer is a very uncritical audience. If you are an inexperienced presenter and do not think you will be able to manage without reading from your notes, at least memorise and practice some short passages so that you can have some eye-contact with the audience and make them feel involved.

5. Be yourself

If you are a natural performer - go for it. If you are naturally reticent, keep it simple. Some of TED talks (TED stands for "a conference bringing together people from three worlds: Technology, Entertainment, Design") can show you how different even renowned presenters are. There are two good examples to compare. One is from Sir Ken Robinson, a former UK government adviser on education who champions supporting creativity in children. He has given some of the most-watched presentations at the TED conferences. He has a really simple presentation style with little or no visuals but manages to keep the audience hanging on his every word by making them feel he is just having a chat. The other is from the late Hans Rosling who was quite over the top in his presentation style and got really involved with his strong visual data. Think about what sort of a presenter you would feel comfortable being and embrace that authentic you. [22, 23]

In conclusion it is possible to say that academic presentations include common and basic elements but every presenter is to master up the rhetorical skills of speaking relevantly in front of different kinds of academic audiences. The analysis of the applications of academic presentations shows that options for the use of the presentation in the university education are wider than ever. This is a sufficient reason to say that academic presentations are part of the educational process, the educational management and the formation of the communication skills of the

lecturers and students alike. The analysis of their incorporation in the educational process shows they can be helpful for creating a database with student and lecturer presentations by authorized and well-prepared institutions and teams. This information should be well structured as the database may become the core of a growing corpus of presentations. The social networks create new opportunities to share presentations; the access to the scientific presentation is easier but at the same time the virtual audience can write and express their opinion in virtual forums, therefore, the presenters should be powerful. Strong support and constant updating of the information on web-sites and catalogues, as well as in the social networks and social media, e.g. blogs, is required. Visual aids included in academic presentations can help the author explain information more coherently which makes presenting easier for the presenter and learning easier for the audience. The question about the author's rights, the evaluation of the students' and lecturers' labour remains important and is still active on the agenda. [14, 23]

Self-Control Questions for Part 2

1. What type of presentations is designed to convince listeners to act on the presenter's proposal – usually by giving evidence and pointing out what can happen if this is not done?
   a) Instructional presentations
   b) Decision-making presentations
   c) Arousing presentations
   d) Persuasive presentations
2. What type of presentations is designed to teach something completely new to the audience?
   a) Instructional presentations
   b) Decision-making presentations
   c) Arousing presentations
   d) Persuasive presentations
3. What type of presentations is designed to make the audience consider the discussion, as well as to rouse interest and emotions to make audience receptive?
   a) Instructional presentations
   b) Decision-making presentations
   c) Arousing presentations
   d) Persuasive presentations
4. What type of presentations aims to make listeners accept and agree with the presenter's proposal?
   a) Instructional presentations
   b) Decision-making presentations
   c) Arousing presentations
   d) Persuasive presentations
5. What can be applied both to written and oral presentations?
   a) you should know and actively engage your audience in the presentation of your research to effectively deliver your ideas
   b) the examples may include theses, posters, grant and project proposals, websites, PowerPoint slides, etc.
   c) your audience has an unlimited amount of time to read, re-read, and analyse your research
   d) you generally have a limited amount of time to present your research, and your audience has even less time to understand what you have said
6. What is the purpose of such stage as planning a presentation?
   a) to support your main idea with a few examples, and their relevance to the overall aim
   b) to use visual aids such as graphs, handouts, charts, and/or media

c) to decide what degree of specialist knowledge is required, the order in which you present it and what might affect how you can deliver your presentation
d) to organise and make your content come to life

7. What you should do in the section of Conclusion, in general?
a) Set the scene and outline your objectives
b) Explain your main findings
c) Tell them what you are going to tell them
d) Summarise each point made

8. What is a sensible size of a font to be used with the overhead projector in a seminar room?
a) 16 point
b) about 20 point
c) 30 point or bigger
d) 12 point

9. Which style of font is preferable to choose for presentation?
a) Times New Roman
b) Arial
c) Bookman Old Style
d) Fonts using 'shadowed' or outline letters

10. How to select the words when you are producing visual material?
a) use full sentences on the screen
b) show a long paragraph of writing
c) show the minimum of words necessary to give the message
d) to use 25 words on the screen as a heading, and then a list of numbered points with brackets or full stops

11. How many punctuation marks are needed on a visual aid?
a) direct question is to be followed by a question mark, and apostrophes should be used correctly in the normal way
b) a list has to be introduced by a colon
c) commas are always needed
d) no punctuation marks should be used

12. What colours show up well on the screen and do not cause problems of colour recognition?
a) red
b) green
c) pink and orange
d) black, dark blue, brown and purple

13. What strategy towards preparation of the visuals is the most successful?
a) Visual aids need careful preparation and their use has to be planned and rehearsed.
b) It is better to practise the talk itself, but leave preparation of the visuals for the later time.

c) You need to know exactly all the details on the images used in the presentation.
d) Visual aids mustn't detract from a speaker, so they are not very important.

14. What practical issues should a presenter consider?
a) simply read the text from the slides without any of your own words
b) use cue cards as memory aids
c) sometimes speakers may prefer to sit
d) fold your arms or put your hands in your pocket

15. Choose the right recommendation for PowerPoint slides.
a) use five slides per minute as a maximum.
b) use a minimum of six points per slide and six words per point.
c) use the "floor test" for readability regarding font size.
d) experiment with colour combinations freely.

16. Choose the wrong recommendation for PowerPoint slides.
a) check the size of images to make sure they are not distracting.
b) animated texts, sounds, and fancy transitions can be effective in academic presentations.
c) use one design style for the entire presentation.
d) avoid switching between programs.

17. Define the correct suggestions which can help to relieve feelings of anxiety.
a) try some relaxation exercises.
b) practise your presentation once before the actual event.
c) never try to mentally rehearse if you are unable to physically rehearse.
d) never try to do something enjoyable and unrelated to the upcoming event.

18. If you have a spoken presentation to give, why it is important to know how long it takes?
a) it is a really effective way to check for sense, structure and flow.
b) the audience may find it difficult to follow what you are trying to say.
c) you may be penalised for going over time as that would be unfair to other presenters
d) some audience members may have visual or hearing impairments.

19. What is the best way of handling questions?
a) never repeat questions.
b) always be respectful; even if the question is way off, address it the best you can and try to add something interesting to the response.
c) Never stop long one-on-one discussions, especially arguments.
d) avoid finishing your answer by asking the person who asked that question whether or not you answered the question sufficiently for them.

20. Define the right tip to become a confident and compelling speaker.
a) simply read your slides
b) avoid using a remote device for advancing your slides
c) use the notes when you can
d) rehearse, rehearse, rehearse

Individual assignment 2

Using the recommendations given above, make a presentation of a scientific report in English of up to 15 slides

References

1. Writing. The University of Sydney, Australia. https://sydney.edu.au/students/writing.html
2. Academic writing: purpose, features and rules. https://writology.com/blog/academic-writing-purpose-features-and-rules.html
3. The Structure, Format, Content, and Style of a Journal-Style Scientific Paper: https://abacus.bates.edu/~ganderso/biology/resources/writing/HTWsections.html
4. Borja, A., 2014: 11 steps to structuring a science paper editors will take seriously - Elsevier Connect. Updated July 10, 2019: https://www.elsevier.com/connect/11-steps-to-structuring-a-science-paper-editors-will-take-seriously
5. Steps of Article Writing. https://www.toppr.com/guides/business-correspondence-and-reporting/article-writing/steps-of-article-writing/
6. How to Create a Good Article. Updated: December 17, 2019. https://www.wikihow.com/Create-a-Good-Article
7. Trevor Day. Success in Academic Writing. Series: Palgrave Study Skills. Published by Palgrave Macmillan (2013), 232 pages. https://www.academia.edu/37028049/Success_in_Academic_Writing
8. Alexander, L.G., 1977: Essay and Letter Writing. Longman Group Ltd., London, Hong Kong, 144 p.
9. Best Proofreading Software [2020]: What Program is Best for You? https://kindlepreneur.com/best-proofreading-software/
10. Editing and Proofreading. The Writing Center, University of North Carolina at Chapel Hill. https://writingcenter.unc.edu/tips-and-tools/editing-and-proofreading/
11. Jim Aspinall. Types of presentations. Hà Nội Open University. Published on Mar 10, 2014. https://www.slideshare.net/jimaspinall3/types-of-presentations
12. Different Types of Research Presentations. Available at: https://www.phdstudent.com/surviving-grad-school/standing-out-in-grad-school/different-types-of-research-presentations
13. Academic Presentations. University of South Wales. https://various1.southwales.ac.uk/documents/1259/Academic_Presentations.pdf
14. Beqiri, Gini. Using visual aids during a presentation or training session. June 21, 2018. https://virtualspeech.com/blog/visual-aids-presentation
15. Joan van Emden & Lucinda Becker. Presentation Skills for Students. Published by Palgrave Macmillan (2004), 151 pages
16. Sheila Liming. Presenting Your Research. Carnegie Mellon University. https://www.cmu.edu/graduate/images/giving-academic-presentations.pdf
17. Preparing Academic Presentations: Presentation Tips https://libguides.library.kent.edu/c.php?g=278358&p=1854549
18. Academic Presentations. Presentations for academic English students. What is an academic presentation? How to give an academic presentation, what you

need to include and important advice. https://www.academic-englishuk.com/presentations
19. Guidelines on Academic Presentations. University of Warwick, United Kingdom
https://warwick.ac.uk/fac/soc/ces/news/research/2017/guidelines/academicpresentations/
20. Presentations and posters. The University of Edinburgh.
https://www.ed.ac.uk/institute-academic-development/study-hub/learning-resources/presentations
21. Brian Reich. Academic presentations.
https://www4.stat.ncsu.edu/~reich/st810A/oral.pdf
22. Academic presentations: Presenting. LibGuides at University of Hull.
https://libguides.hull.ac.uk/present/presenting
23. Ivanka Mavrodieva. Rhetorical Features of Academic Presentations. In: Rhetoric and Communication – 4/2012.
http://rhetoric.bg/rhetoric-and-communication-42012
https://www.researchgate.net/publication/281825559

Glossary

Abstract
An abstract summarizes, in one paragraph (usually), the major aspects of the entire paper in the following prescribed sequence: the question(s) you investigated, (from Introduction); the experimental design and methods used, (from Methods); the major findings including key quantitative results, or trends (from Results); a brief summary of your interpretations and conclusions. (from Discussion).

Academic presentations
A presentation is any situation which involves speaking to a group of people in order to make a point, educate or share information. Academic presentations are part of the educational process, the educational management and the formation of the communication skills of the lecturers and students alike. They include common and basic elements but every presenter is to master up the rhetorical skills of speaking relevantly in front of different kinds of academic audiences.

Academic writing
Academic writing is generally quite formal, objective (impersonal) and technical. It is formal by avoiding casual or conversational language, such as contractions or informal vocabulary. It is impersonal and objective by avoiding direct reference to people or feelings, and instead emphasising objects, facts and ideas. It is technical by using vocabulary specific to the discipline.

Acknowledgments
Acknowledgments are included as needed. If, in your experiment, you received any significant help in thinking up, designing, or carrying out the work, or received materials from someone who did you a favour by supplying them, you must acknowledge their assistance and the service or material provided. Authors always acknowledge outside reviewers of their drafts and any sources of funding that supported the research.

Analytical academic writing
Analytical writing includes descriptive writing, but also requires you to re-organise the facts and information you describe into categories, groups, parts, types or relationships. The kinds of instructions for an analytical assignment include: 'analyse', 'compare', 'contrast', 'relate', and 'examine'.

Arousing presentations
Arousing presentations are designed to make the audience consider the topic or discussion, as well as to rouse interest and emotions to make audience receptive. Such presentation usually involves a lot of powerful language and enthusiastic

discussion, often uses stories or real-life examples of the topic to rouse interest, and can describe a solution to a problem – and gain audience's approval.

Colour blindness
Colour blindness occurs when you are unable to see colors in a normal way. It is also known as color deficiency. Color blindness often happens when someone cannot distinguish between certain colors. This usually happens between greens and reds, and occasionally blues.

Conclusions
The conclusion is closely related to the introduction and is often described as its 'mirror image'. This means that if the introduction begins with general information and ends with specific information, the conclusion moves in the opposite direction.

Critical academic writing
Critical writing is common for research, postgraduate and advanced undergraduate writing. It has all the features of persuasive writing, with the added feature of at least one other point of view. While persuasive writing requires you to have your own point of view on an issue or topic, critical writing requires you to consider at least two points of view, including your own. The kinds of instructions for critical writing include: 'critique', 'debate', 'disagree' and 'evaluate'.

Decision-making presentations
Decision-making presentations are designed to convince listeners to act on the presenter's proposal – usually by giving evidence and pointing out what can happen if this is not done. These presentations can include a description of a problem that the audience/society/certain people face and examples.

Descriptive academic writing
Descriptive is the simplest type of academic writing. Its purpose is to provide facts or information. An example would be a summary of an article or a report of the results of an experiment. The kinds of instructions for a purely descriptive assignment include: 'identify', 'report', 'record', 'summarise' and 'define'.

Discussion
The function of the Discussion is to interpret your results in light of what was already known about the subject of the investigation, and to explain our new understanding of the problem after taking your results into consideration. The Discussion will always connect to the Introduction by way of the question(s) or hypotheses you posed and the literature you cited, but it does not simply repeat or rearrange the Introduction. Instead, it tells how your study has moved us forward from the place you left us at the end of the Introduction.

Editing
Editing is the process of selecting and preparing writing, photography, visual, audible, and film media used to convey information. The editing process can involve correction, condensation, organization, and many other modifications performed with an intention of producing a correct, consistent, accurate and complete work.

Essays
Essays are a very common form of academic writing. All essays have the basic three-part structure: introduction, main body and conclusion.

Evidence
In the persuasive or critical types of university assignments, you need to provide evidence to support your claims. Different disciplines use different types of evidence. For example, in arts disciplines, published sources are the main evidence, while science disciplines often use various types of empirical data (such as statistics or other experimental results) as the main evidence.

Floor test
The "floor test" is used for readability of font size. Print out a slide containing text, and place the page on the floor. Can you read the slide from a standing position? If yes, then your audience can likely read it from their seats. If no, then the font size needs to be increased.

Formal language
Using the formal language, you choose formal instead of informal vocabulary, avoid contractions, avoid emotional language (instead of using absolute positives and negatives, such as ‘proof’ or ‘wrong’, use more cautious evaluations, such as ‘strong evidence’ or ‘less convincing’).

Grammar
Grammar is the way we arrange words to make proper sentences. Word level grammar covers verbs and tenses, nouns, adverbs etc. Sentence level grammar covers phrases, clauses, reported speech etc.

Informative presentations
Informative presentations are brief and to the point. They generally stick to the facts and avoid complicated information. These presentations are usually used to describe facts (intended for other experts), organized from most important topic to least, and best for breaking big information down into small.

Instructional presentations
Instructional presentations give specific directions or orders. They are designed to teach something completely new to the audience. These presentations are very thorough, and usually take a long time, cover all the theory and knowledge from the basic steps to checking the audience's understanding.

Introduction
The purpose of an introduction is to clearly tell the reader the topic, purpose and structure of the paper. The function of the Introduction is to: establish the context of the work being reported; state the purpose of the work in the form of the hypothesis, question, or problem you investigated; and, briefly explain your rationale and approach and, whenever possible, the possible outcomes your study can reveal.

Main body
This is the middle part of your presentation where the bulk of your research is relayed.

Materials and Methods
In this section you explain clearly how you carried out your study in the following general structure and organization: the organism(s) studied and their pre-experiment handling and care, and when and where the study was carried out; if a field study, a description of the study site, including the significant physical and biological features, and precise location; the experimental or sampling design (i.e., how the experiment or study was structured); the protocol for collecting data, i.e., how the experimental procedures were carried out, and, how the data were analysed.

Objective language
Objective language requires you to be objective and impersonal (not mentioning personal feelings). To express your point of view and still write in an objective style, you can: move information around in the sentence to emphasise things and ideas, instead of people and feelings; avoid evaluative words that are based on non-technical judgements and feelings; avoid intense or emotional evaluative language; use modality to show caution about your views, or to allow room for others to disagree; find authoritative sources, such as authors, researchers and theorists in books or articles, who support your point of view, and refer to them in your writing.

Overhead projector (OHP)
Overhead projector slides/transparencies are displayed on the overhead projector (OHP) - a very useful tool found in most lecture and seminar rooms. The OHP

projects and enlarges your slides onto a screen or wall without requiring the lights to be dimmed.

Paragraphs
Most academic writing is structured into paragraphs. It is helpful to think about each paragraph as a mini essay with a three-part structure: topic sentence (also known as introductory sentence), body of the paragraph, and concluding sentence (necessary for long paragraphs but otherwise optional).

Persuasive academic writing
Persuasive writing has all the features of analytical writing (that is, information plus re-organising the information), with the addition of your own point of view. Points of view in academic writing can include an argument, recommendation, interpretation of findings or evaluation of the work of others. The kinds of instructions for a persuasive assignment include: 'argue', 'evaluate', 'discuss', and 'take a position'.

Persuasive presentations
Persuasive presentations aim to make listeners accept and agree with the presenter's proposal. They are very persuasive, usually showing supporting facts and advantages to reinforce credibility, and often highly emotional – they help to gather support and approval.

Plagiarism
Plagiarism is using someone else's work as if it were your own. It is a type of academic dishonesty.

Poster presentation
A poster presentation will involve you in the design and use of high-quality posters. Poster boards can be created using a variety of visual devices, such as graphs and images.

Proofreading
Proofreading is the reading of an electronic copy of a publication to find and correct production errors of text or art. Proofreading is the final step in the editorial cycle.

Referencing
In order to avoid plagiarism, you need to acknowledge your sources through referencing. There are several different referencing conventions, also called citation styles, such as Harvard, American Psychological Association and MLA. The referencing convention you use depends on your discipline.

Reports
Reports generally have the same basic structure as essays, with an introduction, body and conclusion. However, the main body structure can vary widely, as the term ‘report’ is used for many types of texts and purposes in different disciplines.

Results
The function of the Results section is to objectively present your key results, without
interpretation, in an orderly and logical sequence using both text and illustrative materials. The text of the Results section should be crafted to follow this sequence and highlight the evidence needed to answer the questions/hypotheses you investigated.

Spelling
Spelling is a set of conventions that regulate the way of using graphemes to represent a language in its written form. In other words, spelling is the rendering of speech sound (phoneme) into writing (grapheme). Spelling is one of the elements of orthography, and highly standardized spelling is a prescriptive element.

Synthesis Grid
A 'synthesis grid' is tables to show how each theory or reading relates to each heading. It is often created if you have a lot of information, such as for a thesis or dissertation.

Technical language
Using technical language means that you need to develop a large vocabulary for the concepts specific to the discipline or specialisation you’re writing for.

Visual aids
Visual aids are items of a visual manner, such as graphs, photographs, video clips etc. used in addition to spoken information.

Vocabulary
A vocabulary is a set of familiar words within a person's language. Acquiring an extensive vocabulary is one of the largest challenges in learning a second language.

Writer’s block
If you experience writer’s block, you find yourself struggling to find the right word or turn of phrase. In this case you need to take a break and come back later. This will likely help you move past the writer’s block.

Annex 1

An Example of a Research Paper

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BALANCED MINERAL COMPOSITION AS AN INDICATOR OF DRINKING GROUNDWATER QUALITY FOR INDUSTRIAL-AND-URBAN AGGLOMERATIONS IN THE NORTHWESTERN BLACK SEA REGION

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ABSTRACT: *The hygienic aspect of drinking groundwater safety and quality can be defined by the indices of epidemic safety, sanitary, chemical and radiation indices, as well as the optimal content of mineral substances, i.e. a mineral composition adequate to the physiological need of a human organism: total hardness, total alkalinity, the content of iodine, potassium, calcium, magnesium, sodium, solid residual and fluorine. The paper in question provides assessment of the possible influence of drinking groundwater mineral composition on the public health for industrial-and-urban agglomerations in the Northwest Black Sea Region. The values of almost all indices defining the balanced mineral composition deviate from optimal value range in the ground water. The concentrations of calcium, magnesium and sodium ions in the groundwater decrease after treatment in pump-rooms, which further provokes development of the diseases associated with deficiency of these elements. Fluoride deficiency in drinking water, both from surface and ground sources of water-supply, requires substantiation of appropriateness to perform the water fluorination and other means of prevention of caries among public at large. Long-term consumption of drinking groundwater with an imbalance of essential mineral components can be one of the negative impact factors for the on public health.*
Keywords: *groundwater, mineral substances, optimal content, balance of water composition, public health.*

INTRODUCTION

The study area is geologically confined to the Black Sea depression. The geological structure includes the deposits from Cretaceous to Quaternary periods of almost 2000 meter thickness, which overlie the Precambrian crystalline basement. According to the zoning of underground hydrogeological system of Ukraine, this area is located within the North Black Sea stratal water basin [1]. This basin is characterized by large diversity and variability of the lithological sedimentary deposits. Profile unevenness of deposits and frequent alternation of aquifers and impervious rock called forth the formation of a large number of isolated aquifers associated with Cretaceous, Paleogene, Neogene and Quaternary sediments. The water of Neogene sediments is the most studied and widely used. Variability in the groundwater mineralization and chemical composition is also typical for the North Black Sea artesian basin.

Regarding provision of the population with expected drinking groundwater resources, the Odessa and Mykolayiv provinces (Oblasts) have the lowest values, and the Kherson Oblast – the highest values (second only to the Chernihiv Oblast): the Odessa province – 0.28 m^3 daily per capita, the Mykolayiv Oblast – 0.33 m^3 daily per capita, the Kherson Oblast – 4.01 m^3 daily per capita (the average for Ukraine is 1.27 m^3 daily per capita). As regards provision of the population with commercial drinking groundwater resources, the Odessa and Mykolayiv Oblasts are also characterized by the lowest rates, and the Kherson Oblast – by the highest rates in Ukraine: the Odessa Oblast – 0.18 m^3 daily per capita, the Mykolaiv Oblast – 0.06 m^3 daily per capita, the Kherson Oblast – 0.74 m^3 daily per capita (the average for Ukraine is 0.33 m^3 daily per capita) [2].

Administrative regions of this area take one of the last places in Ukraine for the resources of the local river run-off: the Odessa Oblast – 0.35 km^3 per year, the Mykolaiv Oblast – 0.57 km^3 per year, and the Kherson Oblast – 0.14 km^3 per year [3]. Moreover, the industrial-and-urban agglomerations, inhabitated by the major part of the Northwestern Black Sea Region population, are usually remote from the surface water sources (Odessa – 40 km, Mykolaiv – 73 km). In this regard, the groundwater is an alternative source of drinking water. Therefore, its quantitative and qualitative assessment is a very topical issue.

The paper is aimed at assessment of the balance in a mineral composition of drinking groundwater for industrial-and-urban agglomerations in the Northwestern Black Sea Region as a possible influence on the public health.

The hygienical aspect of drinking water safety and quality can be defined by the indices of epidemic safety, sanitary, chemical and radiation indices, as well as the optimal content of mineral substances which determine the adequacy of its mineral composition to the physiological need of a human organism. According to the sanitary rules and regulations, which have been in force in Ukraine since 2010, namely "Hygienic Requirements for Drinking Water Intended for Human Consumption" [4], the drinking water quality indices are the following: total hardness, total alkalinity, the content of iodine, potassium, calcium, magnesium, sodium, solid residual and fluorine (Tab. 1).

Table 1 – The indices of balanced mineral composition of drinking water [4]

Indices	Measuring unit	The range of optimal values
Total hardness	$mmol/dm^3$	1.5 – 7.0
Total alkalinity	$mmol/dm^3$	0.5 – 6.5
Iodine (Iodide ion, I^-)	mcg/dm^3	20 – 30
Potassium (K^+)	mg/dm^3	2 – 20
Calcium (Ca^{2+})	mg/dm^3	25 – 75
Magnesium (Mg^{2+})	mg/dm^3	10 – 50
Sodium (Na^+)	mg/dm^3	2 – 20
Solid residual	mg/dm^3	200 – 500
Fluorine	mg/dm^3	0.7 – 1.2

MATERIAL AND METHODS

Description of the indices of balanced mineral composition of the drinking water from surface and underground sources is provided as a result of the research carried out by: the Branch of 'Infoxvodokanal' for 2006-2007 and 2010-2014, and State Enterprise 'Ukrainian Scientific Research Institute of Transport Medicine attached to the Ministry of Health of Ukraine' for 2001-2011 (Odessa); Municipal Utility Enterprise (MUE) 'Mykolayivvodokanal' for 2005-2014 (Mykolaiv); MUE 'The Industrial Direction of Water and Sewage Utilities of Kherson' for 2015 (Kherson). In addition, the data on particular indices of balanced mineral composition of drinking water were obtained from the published sources. The research outcomes were generalized and represented in the tables and graphs being built by means of the Excel program. Furthermore, the methods of statistical, comparative geographic and cartographic data analysis were used.

RESULTS AND DISCUSSION

The main source of centralized water supply for Odessa and surrounding areas is the water from the Dniester River. An alternative source of drinking water supply for Odessa agglomeration is the stratal (artesian) groundwater related to Upper Sarmatia Miocene aquifer, which lies on about 120-130 m depth. The consumers are supplied with the groundwater through 15 pump-room complexes located in various parts of Odessa: #1 – Gagarin Ave.; #2 – Peremohy Park; #3 – the 6th Station of the Large Fountain; #4 – 1 Academician Glushko Str.; #5 – 14 Marshal Zhukov Str.; #6 – the 25th Chapaivska Division Str., build. 1; #7 - 1 Rabin Str.; #8 – 25 Dalnytska Str.; #9 - Starobazarnyi Square; #10 - Mechnykov Square; #11 – 71 Krymska Str.; #12 – Mykhailovskyi Square; #13 – 'Vympel' Cinema; #14 – Gorkyi Park; #15 – Prokhorovskyi Square. Every day about 50 thousand inhabitants of Odessa consume more than 20 m^3 of water from pump-room complexes.

The technology for water treatment which is used in pump rooms consists of the following purification stages: 1) mechanic and catalytic filtering (Fe^{2+}, Mn^{2+} and H_2S oxidation, removal of fine-dispersed suspended particles); 2) reverse osmotic desalination of the part of water volume (removal of Ca^{2+}, Mg^{2+}, Na^{+}, SO_4^{2-}, Cl^{-}, HCO_3^{-}, and microorganisms); 3) mixing of the water, purified by reverse osmosis, with the water after mechanical filtration in a certain ratio, aimed at bringing the values of total hardness, mineralization, Na^{+}, SO_4^{2-} and Cl^{-} content to the hygienic standards; 4) ozonation of the water, balanced in mineral composition, to ensure its microbiological quality, deodorization, degasation, saturation with O_2, and oxidation of organic and inorganic substances; 5) adsorption treatment of ozonated water at the filters with activated carbon, resulting in removal of O_3, oxidated organic and some inorganic compounds; 6) secondary ozonation of the water prior to delivering it to the end-users [5].

The graphs for the average monthly values of the indices for balanced mineral composition of the drinking groundwater in Odessa, which have been drawn according to the research for the period of 2006-2007, show a more complex distribution pattern compared to similar graphs for the tap water [6, 7]. The distribution pattern for these parameters may largely depend on the data array components, i.e. the data on a specific indicator for various pump rooms. Herewith, the natural hydrodynamic and hydrogeochemical zonality of the groundwater, the operating conditions and other factors need to be considered.

In this regard, the data on the average yearly values of some indices for balanced mineral composition of the groundwater before and after treatment in particular pump-room complexes within Odessa are of interest (Tab. 2).

The values of certain parameters (hardness, alkalinity) for 2015 in particular pump rooms (# 2, 4, 13 and 14) did not differ significantly from the average values given in the Tab. 2. Seasonal fluctuations are typical for the values of such groundwater indices as total hardness, Ca^{2+} concentration (the confidence probability α is 70-50% or less), and the most constant values were observed for alkalinity and Na^{+} content (the confidence probability α is 90% or higher). The groundwater purification efficiency usually ranges 19.5 - 76.2% (depending on the initial water quality), except for the water from the pump room #11, where the purification efficiency comprises 96.8 - 99.2%, i.e. the saltish water is fully desalinated [5].

71 artesian well, the water of which is used for household and drinking purposes by a small part of the population, is operated on the territory of Mykolaiv. For solid residual, total hardness and other indices of balanced mineral composition, the groundwater parameters are usually higher than the maximum rate (Tab. 3).

Water supply of the city of Kherson is provided by groundwater. The main source of water supply is an Upper Sarmatia aquifer. The total number of artesian wells is 151 (with the depth ranging from 80 to 100 m), about half of which are in operation. The drinking groundwater quality meets the requirements [4] in 47 wells, where the water volume is 12.9 mln. m^3 per year. The groundwater quality meets the requirements [4] for certain parameters in 44 wells,

which are running with permission of the sanitary and epidemiological station (the volume is 9.1 mln. m^3 per year). The groundwater inflows into the water supply network over 820 km long. It should be noticed that Pontian Upper Miocene aquifer, which had been used for dumping household sewage until the late 1960s, is a source of pollution, since the polluted water overflows into the Upper Sarmatia aquifer through the annular space of unserviceable wells. The groundwater of the Upper Sarmatia aquifer is polluted with nitrates (250 mg/dm^3, while the standard is 45 mg/dm^3).

Beginning of intensive development of the Upper Miocene aquifer complex in the Dnipro Basin area within the Kherson Oblast fell on 1965-1975, when a large number of water intake wells was drilled. As a result of a survey for operating wells performed under the works on prospecting of drinking groundwater in 2002-2010, it was found that by course of the average values of indices in time there was a change in the hydrogeochemical type of aquifers from freshwater (SO_4^{2-} - HCO_3^- - Cl^- , Ca^{2+} - Mg^{2+} - Na^+) to saltish water (SO_4^{2-} - Cl^- , Na^+- Mg^{2+}) [9]. During the specified time the changes in some indices of balanced mineral composition of the groundwater are also defined (Tab. 4).

Table 2 – Average annual (2001-2010) values of certain indices of balanced mineral composition of the groundwater from pump rooms in Odessa before (a numerator) and after treatment (a denominator), according to [5]

# of a pump room	Total hardness, mmol/dm^3	Total alkalinity, mmol/dm^3	Ca^{2+}, mg/dm^3	Na^+, mg/dm^3	Solid residual, mg/dm^3
1	4.37 ± 0.24	4.24 ± 0.22	35.8 ± 3.0	***212.0***↑ ± 18.5	***795.0***↑ ± 54.6
	1.61 ± 0.03	1.80± 0.03	***13.0***↓ ± 0.36	***94.5***↑ ± 1.6	331.0 ± 15.1
2	3.39 ± 0.10	5.40 ± 0.31	***23.6***↓± 1.7	***274.0***↑ ± 29.5	***916.8***↑ ± 56.7
	1.04↓ ± 0.06	1.66 ± 0.02	***7.33***↓ ± 0.41	***84.3***↑ ± 1.4	279.2 ± 9.8
3	3.73 ± 0.07	4.75 ± 0.20	31.8 ± 1.4	***211.0***↑ ± 9.1	***779.1***↑ ± 34.9
	1.44↓ ± 0.04	2.23 ± 0.01	***12.6***↓ ± 0.36	***101.6***↑ ± 2.1	341,1 ± 8,5
4	2.15 ± 0.37	5.12 ± 0.49	***13.7***↓ ± 2.1	***220.0***↑ ± 16.9	***681.8***↑± 39.4
	1.25↓ ± 0.03	4.12 ± 0.02	***8.96***↓ ± 0.31	***168.5***↑ ± 2.9	468.9 ± 24.3
5	3.78 ± 0.10	4.32 ± 0.22	34.5 ± 1.6	***192.7***↑± 7.1	***709.2***↑± 27.1
	1.54 ± 0.02	1.94 ± 0.02	***14.50***↓ ± 0.48	***87.1***↑± 1.4	313.4 ± 8.2
6	4.59 ± 0.21	4.32 ± 0.20	41.1 ± 1.4	***193.2***↑ ± 23.9	***750.3***↑ ± 66.2
	1.28↓ ± 0.03	1,29 ± 0,01	***11.55***↓ ± 0.5	***63.8***↑ ± 1.1	238.3 ± 10.9
7	2.99 ± 0.14	5.11 ± 0.23	***20.8***↓ ± 1.3	***241.0***↑ ± 22.5	***782.6***↑ ± 59.6
	0.97↓ ± 0.03	1.68 ± 0.01	***7.43***↓ ± 0.46	***81.3***↑ ± 1.3	270.6 ± 10.3
8	4.50 ± 0.19	4.31 ± 0,36	31.81 ± 1.9	***230.1***↑ ± 18.0	***789.0***↑ ± 82.7
	2.06 ± 0.10	2.49 ± 0.02	***14.10***↓ ± 0.76	***127.1***↑ ± 2.2	448.8 ± 16.3
9	***7.38***↑± 0.22	3.84 ± 0.25	52.7 ± 3.0	***176.0***↑± 43.1	***857.2***↑ ± 121.0
	2.15 ± 0.06	1.78 ± 0.02	***15.10***↓ ± 0.53	***95.8***↑ ± 1.7	360.8 ± 13.4
10	4.82 ± 0.17	4.35 ± 0.38	31.6 ± 2.2	***241.0***↑ ± 34.2	***880.0***↑ ± 65.5
	1.53 ± 0,02	1.57 ± 0.03	***11.50***↓ ± 1.14	***85.4***↑ ± 1.3	308.2 ± 15.3
11	***8.74***↑ ± 0.35	***8.11***↑ ± 0.31	49.4 ± 6.5	***1102,8***↑ ± 86.1	***3543.4***↑ ± 170.3
	0.97↓ ± 0,03	1.68 ± 0.01	***7.43***↓ ± 0.46	***81.3***↑ ± 1.3	270.6 ± 10.3
12	4.89 ± 0.12	4.23 ± 0.36	***35.6***↓ ± 7.4	***236.1***↑ ± 35.6	***820.1***↑ ± 106.0
	1.50 ± 0.06	1.49 ± 0.01	***10.34***↓ ± 2.24	***87.1***↑ ± 1.6	311.2 ± 12.9

13	4.05 ± 0.06 1,69 ± 0,05	4.62 ± 0.29 1.98 ± 0.02	35.6 ± 2.1 *15.50*↓ ± 0.6	*211.4*↑ ± 23.3 *93.4*↑ ± 1.5	*768.7*↑± 26.4 342.7 ± 13.5
14	2,60 ± 0,07 *0.63*↓ ± 0.03	4.78 ± 0.24 1.17 ± 0.01	*19.8*↓ ± 1.7 *4.71*↓ ± 0.28	*214.9*↑ ± 16.6 *58.8*↑ ± 1.0	*729.3*↑ ± 112.1 *197.0*↓ ± 11.1
15	*7.18*↑ ± 0.28 2.24 ± 0.12	3.80 ± 0.37 1.40 ± 0.02	53.0 ± 1.4 *15.0*↓ ± 1.0	*170.4*↑ ± 28.0 *65.4*↑ ± 1.1	*817.1*↑ ± 87.9 289.3 ± 20.0

Note: ↓ - below the minimum norm / standard (*minN*), ↑ - above the maximum norm (*maxN*) [4]

Table 3 – Certain indices of balanced mineral composition of the water from particular wells in Mykolaiv, according to [8]

Indicator	Wells					
	#1	#2	#3	#4	#5	#6
Solid residual (mineralization), mg/dm^3	*3328*↑	*1976*↑	*1585*↑	*3709*↑	*2824*↑	*6073*↑
Total hardness, mmol/dm^3	*13.2*↑	4.5	2.6	*15.1*↑	*10.5*↑	*24.0*↑

Table 4 – Some indices of balanced mineral composition of the groundwater in the Upper Miocene aquifer complex of the Dnipro Basin within the Kherson Oblast, according to [9]

Indicator	1965-1975 (n = 62)	2002-2010 (n = 30)
Solid residual (mineralization), mg/dm^3	930.0	*2120.0*↑
Calcium (Ca^{2+}), mg/dm^3	70.4	*149.3*↑
Magnesium (Mg^{2+}), mg/dm^3	*62.0*↑	*151.4*↑
Total hardness, mmol/dm^3	**8.9**↑	**20.0**↑
Sodium (Na^{+}), mg/dm^3	169.7	*312.6*↑

Review of the published data provides evidence that the balanced mineral composition of drinking water is a factor that significantly affects public health.

Heightened concentrations of iron, boron and bromine, which are not included into the list of balanced composition indices for drinking water [4] but belong to essential (iron) and conditionally essential (boron and bromine) microelements, were registered in the groundwater of Upper Sarmatia aquifer in Odessa [10]. The excessive iron (Fe^{2+}) can be removed by mechanical catalytic filtration. The average boron content in the groundwater before treatment ranges from 0.64 ± 0.05 mg/dm^3 to 5.22 ± 0.18 mg/dm^3. The content of bromine (bromide anion) ranges from 0.10 mg / dm^3 to 2.0 mg/dm^3. After treatment boron and bromine concentration in the groundwater is below the required value (≤ 0.5 mg/dm^3 and ≤ 2.5 mg/dm^3 respectively), but the above-standard values are periodically observed at all pump rooms, since the efficiency of boron removal by means of existing technology is 20 - 65.42 % and bromine anion removal – 21.74 - 90.16 %. Therefore, it is reasonable to remove boron and bromine by reverse osmosis in two stages or by electrodialysis and reverse osmosis consecutively [5]. This is important because excessive boron in the environment causes an endemic disease of human and animal alimentary canal, accompanied by enteritis, diarrhea, weight loss,

general weakness, disturbance of carbohydrate and protein assimilation [10, 11], and the excessive bromine contributes to the circulatory system diseases, suppression of the thyroid gland and blocking of iodine flux into it.

While the groundwater from most of wells in Mykolaiv and Kherson is characterized by abnormal values of total hardness, the average values of *total hardness* of the groundwater before treatment at all pump rooms in Odessa are within the standard range, except for the pump rooms # 9, 11 and 15, where the value of this indicator was slightly higher than the standard maximum (see Tab. 2). After the groundwater treatment the average values of hardness at 8 pump-room complexes were within the normal limits, and at the rest of them – below the minimum standard (*minN*). These data indirectly indicate calcium and magnesium surplus (but not their correlation) in groundwater used for drinking purposes in most of the pump rooms. Magnesium and possibly calcium come into the human body mainly as constituents of drinking water. Internal use of hard drinking water leads to the disturbed process of intestinal fat absorption owing to formation of insoluble calcium and magnesium soaps during the saponification of fats.

In some authors' opinion [12], the heightened hardness of drinking water contributes to the increase in circulatory system diseases. According to the World Health Organization materials, the epidemiological studies conducted in various countries over the past 50 years have shown a link between the growing number of circulatory system diseases, followed by a fatal outcome, and soft water consumption [13], but there are quite a few papers in which the point is that such indices of drinking water, as hardness, calcium and magnesium content do not affect the incidence of the circulatory system diseases [14]. Soft drinking waters sometimes have a high natural content of sodium, but its excess is an additional factor in the development of some forms of hypertension.

Average values of *total alkalinity* in the groundwater from pump-room complexes in Odessa do not go beyond the standard range both before and after treatment (see Tab. 2), which is a positive factor for the public health. A slight excess of the standard value of total alkalinity was registered only for groundwater from the pump room #11 before purification. The use of alkaline drinking water is known to contribute to higher life expectancy by 20-30%.

Calcium content in the groundwater of Odessa in 2006-2007 was within the range of its standard values, i.e. it did not reach the minimum standard level (*minN*) [7, 15, 16]. The same pattern is observed for the average annual values for 2001-2010, except for the pump rooms #7 and #14 (see Tab. 2), however, Ca^{2+} concentration in the water from all the pump rooms after treatment is below the minimum standards (*minN*) [4]. According to the data for 1965-1975, Ca^{2+} content in the groundwater from the Upper Miocene aquifer complex of the Dnipro Basin (within the Kherson Oblast) was within the standard, but according to the data for 2002-2010 the content almost 2 times exceeded the maximum standard (75 mg/dm^3) [4]. A wide body of opinion that the occurence of Ca^{2+} in drinking water contributes to induration of the arteries, formation of kidney stones and liver diseases, is not confirmed by the factual evidence. Having high physiological activity, Calcium performs various functions in the organism, such as bone formation, mineralization of teeth, regulation of intracellular processes, regulation of nerve conduction and muscular contractions, and maintenance of stable cardiac activity. High calcium in the body may be the reason for arthritis, osteodystrophy, osteofibrosis, muscle weakness et al. Calcium deficiency is the cause of 147 diseases (osteoporosis, tachycardia, arrhythmia, albication of hands and feet, renal and hepatic colics, hyperexcitability, etc.). For instance, osteoporosis, a disease that ranks 10th on mortality among adults, is caused by calcium deficiency in the body [13].

Magnesium content, similarly to the value of total hardness, in the waters from the pump-room complexes within Odessa in November and December 2006 and January-March 2007 was slightly lower than the minimum standard value (*minN*) [7, 15, 16]. Magnesium is the most constitutive intracellular element. The normal level of magnesium in the body is necessary for many vital processes; magnesium reinforces the immune system. Excessive amounts of magnesium cause a laxative effect. As magnesium concentration in the blood decreases, the symptoms of neural

excitation and even seizures are observed. Reduction of magnesium content in the body results in the increased calcium content while a surplus of magnesium leads to calcium and phosphorus deficiency. Since the major part of magnesium is ingested with food, the question on significance of magnesium concentration in drinking water is debatable. However, such form of magnesium has a higher bioaccumulation factor than magnesium received from food. Magnesium content in drinking water is assumed to be a decisive factor for those people who consume it in small amounts with food, but drink the magnesium-rich water. A connection between magnesium content in water and *Mg* in a cardiac muscle, a skeletal muscle and coronary arteries is revealed [13].

As for *sodium* concentration, an apparent excess of the maximum normal value (*maxN*) both before and after treatment of the groundwater is traced throughout the observation period in all urban agglomerations under the study (see Tab. 2, 3, 4). If we consider the content of Na^+ as a physicochemical indicator of drinking water safety and quality, the groundwater meets the requirements ($\leq$ 200 mg/dm^3) [4]. Sodium is known to be of importance in intracellular and intercellular exchange. Sodium and potassium correlation is in charge of two important interconnected processes: maintenance of a constant osmotic pressure and a constant volume of fluid. Sodium consumption in large quantities leads to the loss of potassium. Therefore, a balanced intake of these substances (Na^+ and K^+) is of particular significance. The main purpose of Na^+ is maintenance of water-salt balance in the cells of a human body, normalization of neuromuscular activity and renal function. In addition, sodium keeps mineral substances soluble in the blood. Excess sodium can cause hyperexcitability, hypersensitivity and hyperactivity. In some cases, excessive thirst, hyperhidrosis and frequent urination unusual for this particular person are likely to appear. Most of sodium is included in chlorides, and therefore the high sodium content correlates with the heightened mineralization of drinking water.

Solid residual is the amount of dissolved substances, mainly minerals, in 1 dm^3 of water. The fraction of organic matter in the solid residual makes up no more than 10%, so we can assume that this indicator defines a total mineralization of water. The waters from Upper Sarmatia aquifer on the predominant part of Odessa agglomeration are fresh and light saltish. The most mineralized water relates to the areas, located to the north of Peresyp district, as evidenced by the highest content of solid residual (almost 4 g/dm^3) in the water from pump room #11. In addition to high mineralization, the heightened values of hardness, alkalinity, potassium and sodium content are typical of such ground water, that is why they can be used for drinking purposes only after further treatment. The treated ground water is characterized by the average content of solid residual within the standard optimal range. The groundwater from the studied wells in Mykolaiv usually exceeds the maximum standard for the value of solid residual (see Tab. 3). A significant excess of the maximum norm (*maxN*) is also typical for the groundwater from Upper Miocene aquifer in Kherson [4]. The drinking water with heightened mineralization affects gastric secretion and disturbs a water-salt balance that leads to various adverse physiological abnormalities in the body (heat exhaustion under hot weather, disturbed sense of quenching the thirst, increased hydrophily of tissues, change in gastric secretion, reinforced motor functions of the stomach and intestinal peristalsis etc.). On the other hand, a long-term consumption of low-mineral water may bring to some adverse physiological disturbances in the human organism, particularly, to the decreased chloride content in tissues etc. [12].

The *fluoride* content both in river and tap water as well as in groundwater within industrial-and-urban agglomerations of the Northwestern Black Sea Region usually does not reach the minimum standards (*minN*) [4]. The physiological role of fluoride consists in its plastic function, participation in blood formation and regulation of immunogenesis, functioning of the endocrine glands, development of collagen, bone and cartilaginous tissue. Fluoride deficiency is thought to be the primary cause of caries and hypofluorosis occurrence (late teething, a fluoride-dependent osteoporosis, etc.). F^- concentration in water of less than 0.5 mg/dm^3 is one of the major causes of tooth decay. It is

believed that F^- concentration in the drinking water of more than 1.5 - 2 mg/dm^3 is also detrimental to the public health. Under the use of water with F^- concentration $\geq$ 5 mg/dm^3 fluorosis occurs in almost all of the population. If in the temperate climate the use of drinking water with F^- concentration of 4 - 8 mg/dm^3 does not provoke the symptoms of bone fluorosis, in the subtropical and tropical climate fluoride concentration of above 5 mg/dm^3 calls forth osteoporosis and skeletal deformation. The major part of fluoride gets into the human organism with water and food (bread, fish, meat, tea, etc.). Additionally, fluoride can also be ingested with toothpaste. [17] Since fluoride is a microelement with a relatively abrupt transition from the physiologically beneficial concentrations to the concentrations provoking a toxicosis, then convincing arguments both from supporters and opponents of drinking-water fluorination as well as on the use of fluorinated toothpastes are offered in Ukrainian and foreign publications.

CONCLUSION

As a result of the research the following can be concluded:

- Deviation from optimal value range is typical for almost all the identifiable parameters of balanced mineral composition of groundwater in the studied industrial-and-urban agglomerations, yet after the groundwater treatment calcium, magnesium and sodium concentrations are significantly decreased, which further provokes development of the diseases associated with deficiency of these elements;
- Additional treatment of groundwater only partially solve the problem of balancing the mineral components of drinking water, and in some cases may even aggravate the problem;
- Fluoride concentration in drinking water from surface and ground sources of water-supply does not reach the minimum standards, that requires substantiation of appropriateness to perform the water fluorination, use fluorinated toothpastes and other means of prevention of caries and other diseases among public at large.
- Long-term consumption of drinking groundwater with an imbalance of the mineral composition can be one of the negative impact factors for the public health, so there is a need for further special studies.

REFERENCES

1. Kamzist Zh.S., Shevchenko O.L. *Gidrogeologija Ukraïny* [Hydrogeology of Ukraine]. – Kyiv: INKOS, 2009. – 614 p.
2. *Strategija vykoristannja resursiv pytnyh pidzemnyh vod dlja vodopostachannja:* u 2 t./ za red. E.A. Stavickogo, G.I. Rud'ka, €.O. Jakovleva [Strategy of the use of drinking groundwater resources for water supply. In 2 volumes. Edited by E.A. Stavytskyi, G.I. Rudko, Ye. O. Yakovlev.] Volume 1. – Kyiv-Chernivtsi: Bukrek 2011. – 347 p.
3. Jacik A.V. *Vodogospodars'ka ekologija: u 4 t., 7 kn.* [Water Management Ecology]. – Kyiv: Geneza, 2003. – Vol. 1, books 1-2. – 400 p.
4. SanPiN 2.2.4-171-10. *Derzhavni sanitarni normy ta pravyla «Gigienichni vymogy do vody pytnoï, pryznachenoï dlja spozhyvannja ljudynoju»* [State sanitary rules and regulations "Hygienic requirements for drinking water intended for human consumption"]. Kyiv, 2010, 12 p.
5. Petrenko N.F., Sozinova O.K., Vlasjuk G.V., Opanasenko V.M. *Gigienichna ocinka kombinovanogo zastosuvannja membrannyh ta ozono-sorbcijnyh metodiv ochyshhennja ta znezarazhennja vody, shho vykoristovujut'sja na bjuvetnyh kompleksah m. Odesy* [Hygienic evaluation of the combined use of ozone and membrane-sorption methods of purification and disinfection of the water used at pump-room complexes in the Odessa city]. *Prychornomors'kyj ekologichnyj bjuleten'– Black Sea Ecological Bulletin*, 2012. – no. 4(46). – pp.160-170.
6. *Medyko-gidrogeohimichni chynnyky geologichnogo seredovyshha Ukraïny. Za red. prof. G.I. Rud'ka* [Medical-hydrogeochemical factors of geological environment in Ukraine. Ed. Prof. G.I. Rudko]. Kyiv – Chernovtsy: Bukrek Pbl., 2015.- 724 p.
7. Safranov T.A., Polishhuk A.A., Volkov A.I. (Eds.).*Fiziologicheskaja polnocennost' mineral'nogo sostava pit'evyh vod Odesskoj aglomeracii* [Physiological adequacy of the mineral composition of drinking water in Odessa agglomeration]. *Visnik Odes'kogo deržavnogo ekologičnogo universitetu - Bulletin of Odessa State Environmental University*, 2013, no. 15, pp. 5-16.
8. Smirnova S.M., Smirnov V.M., Bagatjuk D.V. *Ocinka mozhlyvosti vykoristannja pidzemnyh dzherel vody v jakosti pitnoï vody na prikladi mikrorajonu Ternovka mista Mikolaeva* [Assessment of capacities to use the ground water

sources for drinking purposes on a case study of Ternovka microdistrict of Mykolaiv]. *Naukovij visnik MDU imeni V.O. Suhomlins'kogo, biologichni nauki. – Scientific Bulletin of Mykolayiv State University named after V. Sukhomlynsky, biological sciences,* 2014. – Vol. 6.2(107). – pp. 57-63.

9. Sherbak O.V., O.P. Lobasov, L.O. Kalinichenko. *Evoljucija makrokomponentnogo skladu pytnyh pidzemnyh vod v umovah tehnogenezu na terytorii Hersons'koï oblasti* [Evolution of macrocomponent composition of drinking groundwater under technogenesis in the Kherson Oblast]. *Visnyk ONU, geografichni ta geologichni nauky - Bulletin of Odessa National University, Geography and Geology*, 2014. – Vol. 19. – no.3. – pp. 289-298.
10. Avcyn A.P., Zhavoronkov A.A. *Mikrojelementozy cheloveka: monografija* [Human Microelementoses: monograph]. Moscow: Medicine Pbl., 1991, 496 p.
11. *Profilaktychna toksikologija ta medychna ekologija / Za red. akad. NAMN Ukraïny I.M. Trahtenberga* [Practical toxicology and medical ecology. Ed. Trakhtenberg, I.M.]. Kyiv: Avicena Publ., 2010. – 248 p.
12. Akulov K.I., K.A. Bushtueva, Goncharuk E.I. (Eds.). Kommunal'naja gigiena [Communal hygiene]. Moscow: Medicina Publ., 1986, 608 p.
13. *Vstup do medychnoï geologiï. U dvoh tomah / Za redakcieju G.I. Rud'ka, O.M. Adamenka* [Introduction to medical geology / In two volumes]. Ed. G.I. Rudko & O.M. Adamenko]. Kyiv: Akadempres Pbl., 2010.
14. Ivanov A.V., Tafeeva E.A., Davletova N.H., Vavashkin K.V. *Sovremennye predstavlenija o vlijanii pit'evoj vody na sostojanie zdorov'ja naselenija* [Current views on the influence of drinking water on public health condition].*Voda: himija i ekologija - Water: chemistry and ecology.* 2012, no. 3, pp. 48-53.
15. *Medyko-gidrogeohimichni chynnyky geologichnogo seredovyshha Ukraïny. Za red. prof. G.I. Rud'ka* [Medical and hydrogeochemical factors of the geological environment in Ukraine. Ed. Prof. G.I. Rudko]. Kyiv – Chernovtsy: Bukrek Pbl., 2015.- 724 p.
16. Safranov T.A. *Fiziologichna povnocinnist' mineral'nogo skladu pidzemnyh pytnyh vod jak factor formuvannja zdorov'ja naselennja (na prykladi Odes'koï aglomeracii)* [Physiological adequacy of the mineral composition of drinking ground water as a formation factor for the population health (with Odessa agglomeration taken as an example)]. *Nadrokorystuvannja v Ukraïni – The use of mineral resources in Ukraine.* Kyiv, 2014, pp. 284-291.
17. Bardov V.G., Fedorenko V.I., Bilec'ka E.M. (Eds.). *Osnovy ekologiï: pidruchnyk* [Fundamentals of ecology: textbook]. Vinnitsa: Nova Kniga Publ., 2013, 424 p.

Annex 2

An Example of a Presentation

Green SMART Blue

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Co-funded by the Erasmus+ Programme of the European Union

ERASMUS+ INTENSE

Nature-Based Solutions to Improve the Comfort of Living in Odessa

Lviv, 07-09.11.2019

Co-funded by the Erasmus+ Programme of the European Union

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Topicality

- Due to the peculiarities of socio-economic development, an **unfavourable environmental situation** has been formed in Odessa.

The **main challenges** include:

- increasing air pollution
- lack of quality water supply and efficient wastewater treatment system
- incompleteness of coastal protection structures
- intensification of dangerous exogenous geological processes
- sharpening of the issue of waste management
- inconsistency of the road transport network with the needs of freight and passenger transportation
- unsatisfactory condition of the historic city centre

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Topicality

- In recent years, Odessa, as well as many cities in Ukraine, has been characterized by **a decrease in population, and a high sickness rate and mortality**.
- The housing supply (18.1 m² per capita) is 17% lower than the average for Ukraine.
- This necessitates the application of nature-based solutions to increase the comfort of living in this urban environment.

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The study aim

- **identification of possible nature-based solutions** that will contribute to the comfort of living of the urban population in the studied area

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Elements of an adaptation strategy for the area under study

- improvement of the healthcare system and social security services
- development of environmentally safe recreational and entertainment opportunities
- management and support of local health resorts
- regulation of atmospheric emissions, waste water discharges and accumulation of municipal solid waste
- limitation of fishing and navigation within the recreational zone
- improvement of environmental education and promotion of environmental values

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Examples of successful solutions to the issue of optimization of the urban environment quality

- the greening of the Brazilian city of **Curitiba** with a population of 1.6 million people was performed through reorganization of the whole system of public transport, removal of industrial enterprises from the residential part and increase in the area of verdurization by 100 times.

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Examples of successful solutions to the issue of optimization of the urban environment quality

The environmental programme of Canada's **Vancouver**, three times recognized as the Best City on Earth, envisages 10 steps by 2020 to become "**the greenest city in the world**":

- a creation of 20,000 new jobs in the green industry
- the decreased dependence on oil and other fossil fuels
- an increase in the thermal efficiency of buildings by 20%
- a decrease in the car use: 50% of all city traffic is pedestrian or bicycle
- 40% reduction of solid waste incinerated
- provision of a 5-minute walking distance to natural recreation places for every city dweller
- a reduction of the ecological footprint of each inhabitant by 33%
- a decrease in the consumption of tap water by 30% with 100% quality assurance
- achievement of city-wide air purity at the level of WHO requirements;
- an increase in a local food production

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Strategic Documents

One of the priority directions for city development, defined in **the Strategic Development Concept 'Odessa – 2022'** and **the Strategy for Economic and Social Development of Odessa by 2022, – "Environmentally Safe City. City of Healthy People"** – envisages provision of environmentally favourable living conditions, improved quality and accessibility of healthcare services and promotion of a healthy lifestyle.

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Green areas

- Green areas are a **buffer** between urban complexes and natural ecosystems.
- They are **effective filters** for air purification, reduce wind force, regulate thermal regime, humidify the air, that is of great importance to health.
- In addition, they refine urban ecotopes and create **aesthetic comfort** for humans.
- At the same time, the provision of green spaces for public use in Odessa is only **7.4 m²** per inhabitant, while the standard is **13.8**.

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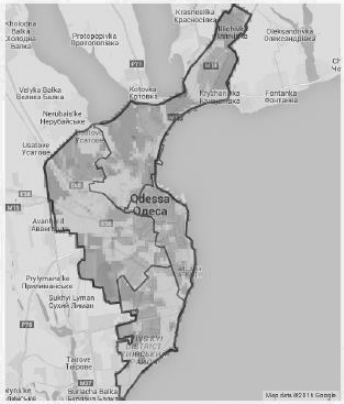
A map for the provision of green space for residents of Odessa (averaged by the area of green spaces)



Legend

- green spaces (parks, gardens, gardens)
- built-up areas and industrial areas

[Department of Ecology and Development of Recreational Zones of Odessa City Council, 2016, http://ecoman.od.ua/]

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Species composition of the urban flora

- Species composition of the urban flora is determined by both the geographical location (at the south of the Steppe zone of Ukraine) and the planting approaches having been applied.
- So, while **there are less than 10 species of native trees and shrubs** among the remnants of ravine forests, about **800 species and forms are used in the city's green open space.** The latter originate from other countries and continents.
- As an example, ***Ginkgo bilŏba*** is native to China, other representatives of the gymnosperms come from East Asia (**juniper**, **spruce**, **pine**), and the symbol of Odessa - ***Robinia pseudoacacia*** ("white acacia") and other flowering plants (**honey locust** *Gleditsia triacanthos*, **Kentucky coffeetree** *Gymnocládus dióicus*, **ashleaf maple** *Ácer negúndo*, **eastern cottonwood** *Populus deltoides*, etc.) are natives of America. The latter tolerate the air pollution and paving streets well, capture dust and harmful gases, and are ornamental enough.

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Species composition of the urban flora

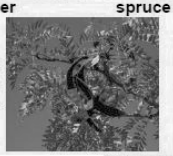
Ginkgo bilŏba

juniper

spruce

pine

honey locust ***Gleditsia triacanthos***



Kentucky coffeetree Ácer negúndo

Robinia pseudoacacia

ashleaf maple Gymnocládus dióicus

eastern cottonwood ***Populus deltoides***

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Species composition of the urban flora

- Among about 900 species of herbaceous urban flora, **weeds** comprise more than a third.
- Part of them during flowering is allergenic (e.g., **common ragweed** *Ambrosia artemisiifolia*), although these ruderal species, which are best adapted to the extreme living conditions, are a powerful source of photosynthesis in the city.

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Recommendations

- In order to neutralize a number of harmful substances in the urban air, according to the research of A.S. Bonetskyi et al., it is recommended to plant such trees and shrubs as **horse chestnut** (*Aesculus hippocastanum*), **Nanking cherry** (*Prunus tomentosa*), **American sycamore** (*Platanus occidentalis*), **Chinese thuja** (*Platycladus orientalis*), **Atlas cedar** (*Cedrus atlantica*), as well as **essential oil plants**.






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Recommendations

- The most effective way of expanding green areas is to form a **green belt of Odessa**, i.e. a system of ecological corridors around the city centre that would connect green space at the coastal slopes with all existing parks, gardens and squares by green links, stripes of boulevards and streets, and through establishment of new recreation zones instead of abandoned industrial areas.

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Conclusions

In view of the adaptation strategy and the challenges of Odessa identified during the study, **the current priority areas** are:

- improvement of the air monitoring and protection system
- modernization of water supply and drainage systems
- introduction of the system for separate collection and recycling of municipal solid waste
- urban green belt formation

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Conclusions

- extended use of alternative energy sources, including solar panels on rooftops and electric vehicles
- reconstruction of coastal protection structures and a set of landslide prevention measures at the coastal zone
- regulation of fishing and navigation in the recreational area
- environmental enlightenment activities in schools, out-of-school institutions and among the general public



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Навчальне видання

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