

Problem definition and working with a topic

Text objective:

In this module you will learn to define a problem, you will understand what it means to solve a problem, and the relation of the problem to topics of university papers. You will find that while working with a topic it is necessary to introduce the topic with a question, and identify key and related concepts. You will also learn to expand and narrow a topic, and use methods of critical thinking while solving a problem. You will try out a few creative techniques of problem definition.

Basic terms:

- **university papers** - a collective term for papers which are prepared, written, presented or defended in university environment (seminar and semester papers, final and qualification papers);
- **problem solving** - a process taking place in such cases when we need to overcome obstacles in order to find the answer to a question or reach a certain goal.

Keywords:

problem identification, problem definition, topic choice, topic expansion, topic narrowing, key concepts of a topic, synonym, creativity, creative techniques

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1. MODULE INTRODUCTION

The module of problem definition and working with a topic will help you increase your ability to work with a topic, and identify and define a problem. The main objective is for you to learn to **reflect upon a topic**, problematize it and be able to determine **key concepts** relating to the topic, and thus create a set of terms applicable for the search of required documents.



The following table uses the method of critical thinking. Now (before you start reading another instruction text), **fill in the first column of the table “I know”**. Put in it everything you already know about problem solving and working with topics. Write your knowledge, reflections or ideas. As soon as you fill in the first column, **fill in the second one, “I want to know”**. In this column, formulate ambiguities and questions concerning the set topic. **Leave the last column empty, you will fill it in at the end of the module. This assignment is not graded; however, it will facilitate your study.**

| I know | I want to know | I have come to know |
|--------|----------------|---------------------|
| | | |

2. PROBLEM SOLVING AND RELATION TO TOPICS OF UNIVERSITY PAPERS

During your university studies, one of the requirements for passing a number of courses is and will be writing a **paper** (seminar paper, essay, etc.). When you decide to write the required paper, a **“problem”** arises, which in this case is writing a scientific text on a certain **topic**.

3. TOPIC SELECTION

Topic selection is sometimes a great obstacle, i.e. a **problem**. There are various pieces of advice on topic selection, and we will give you a few: **consult** and clarify the **outline and objectives** of the paper with the teacher, choose such a topic about which you have enough **knowledge** to help you with the initial orientation and literature selection, focus on a topic that falls within the area of your **scientific interest** or study specialization.

Practical example**Examples of general topics:***Internet communication**Terrorism, Nanotechnology**Breakups of relationships***Examples of specific topics:** *The reflection of the dispute between Elisabeth of Bohemia and Elisabeth Richeza of Poland in old Czech literature***4. TOPIC DEFINITION**

In the following section we will focus on techniques facilitating **topic definition**, and you will be provided with instructions how to choose suitable words for literature **search** concerning your topic.

4.1 INTRODUCING TOPIC WITH A QUESTION

Clarify the issue you want to deal with in your paper with a **question**. Formulating the topic by means of a question helps you clarify your ideas. You may come up with more questions than one. If you choose **more questions**, you will gain **more viewpoints** of the given topic, and you will thus find out to what extent you are able to think about the topic and how much knowledge you have about it.

Furthermore, **writing down a few brief sentences** relating to the issue may help you while reflecting upon the topic. You can work with such sentences in a similar way as with questions.

A practical example of putting questions

Topic: *Information training of university students and working with information sources.*

It is possible to problematize the given topic as follows, for instance:

Does information training of university students affect their ability to work with information sources? Do university students use information sources more frequently due to information training?



There are a few **more techniques** of problem definition. We can apply e.g. the method of **5W&1H**. This means answering 5 questions, i.e. WHO, WHAT, WHERE, WHEN, WHY and HOW.

Who? Who is concerned with the topic? Who was the first to refer to the topic?

What? What exactly is the subject matter of my research?

Where? Where did the problem originate?

When? When was the last time the topic was referred to, is it obsolete or up-to-date?

Why? Why is it important to write about this issue?

4.2 IDENTIFICATION OF KEY CONCEPTS IN A QUESTION

In the next step, choose one question (from those you formulated in the previous step) which

best describes the issue you would like to deal with in your paper. Within this question, select the so-called **key concepts**; they are those which are **determining** for the description of the **core** of the issue, and serve for its sufficient identification. You will use these keywords **in the search** for required documents. To begin with, avoid function words or the so-called **stop words** (conjunctions, prepositions), and words which are not key to your topic. Focus on nouns.

A practical example:

The following key concepts can be identified in the question:

Does information training of university students affect their ability to work with information sources?

4.3 SELECTION OF SYNONYMS AND RELATED CONCEPTS

Write the selected key concepts down on a piece of paper, and with each of them, create a set/list of **synonyms** (see more on synonyms below) and other related concepts (spelling variants, word forms, superior and subordinate concepts). The created lists will help you while narrowing or expanding your topic, or while searching for required literature.

The **more varied** your set is, the more effective your **created helper** will be.

HINT! If you are unable to find concepts related to a technical term, use relevant explanatory dictionaries concerned with the given field, dictionaries of synonyms and encyclopaedias.

4.3.1 Synonyms

Synonyms are words of nearly **the same or similar meaning**. You can use available dictionaries in order to find synonyms.

Practical example

The word **ability** may have synonyms:

- capability,
- qualification,
- competency.

The phrase **university student** may have a synonym: undergraduate student.

4.3.2 Superior and subordinate concepts

You may add concepts to your key concept which are in a **hierarchic relation** to it - **either superior or subordinate**. A hierarchic relation means a relation between two entities (terms, classes) where one entity is subordinate to the other. A **superior concept** is one which includes other concepts in addition to your key concept; e.g. the term vehicle is superior to the words train, car and plane. A **subordinate concept** is one which is subordinate to your key concept, e.g. train is a concept subordinate to vehicle. In terms of traditional logic, there are the following concepts: general, broader (i.e. superior), and specific, narrower (i.e. subordinate).

Practical example

In a hierarchic relation, the concept **university student** is not subordinate to professor or lecturer; it is subordinate to **student**, which is a more general expression.

On the other hand, **foreign university student** specifies the concept of university student (it is subordinate), and university student is in this case a superior term.

The hierarchy is then as follows:

student,

university student,

foreign university student.

5. TOPIC SPECIFICATION AND GENERALIZATION

More general (superior) and more specific (subordinate) terms related to the key concept may be used while specifying (narrowing) or generalizing (expanding) the topic. The reasons for narrowing or expanding topics are found below.

5.1 Topic specification

If you find too much information relating to the topic and realize it is too general, you need to **narrow** it. You can take advantage of the **subordinate/specific** concepts which you have included in the keyword sets.

Practical example

A topic thus formulated with a question might sometimes be too general:

Does team cooperation of university students bring about better-quality diploma theses?

Too many documents concerned with the issue have been found. From the following hierarchy

student
university student
foreign university student

it is possible to use the subordinate term, *foreign university student*.

The question may be reformulated as follows:

*Does team cooperation of **foreign** university students bring about better-quality diploma theses?*
or

*Does team cooperation of foreign university students bring about better-quality **Master's** diploma theses?*

5.2 Topic generalization

If you do not find enough information to the topic, although having used various search techniques, synonyms and word forms, it is necessary to **expand** your topic. You can take advantage of the **superior/general** concepts which you have included in the keyword sets.

Practical example**A topic thus formulated with a question might sometimes be too specific:**

Does information training of university students affect their ability to work with information sources?

The question may be reformulated with the superior term student.

*Does information training of **students** affect their ability to work with information sources?*

6. MODULE SUMMARY

In this module you have learned how to choose a university paper topic and identify specific and general topics, how to introduce your topic with a question and identify a problem, and how to reflect upon your topic in order to find key concepts and create a set of synonyms and related concepts. You have further learned to define hierarchic relations, generalize and specify topics, and use creative methods for working with your topic.

Now please return to the table at the beginning of the training text and fill in the last column, “I have come to know”. You will thus clarify your reflections and acquired knowledge.

Points to think about... *What had you known before? Conversely, what did not you put in the table at the beginning?*

Now you are armed with the first key ability to write a good-quality paper; you will learn more in the following modules.

Points to remember:

- identification of a paper topic poses a problem,
- the topic should be chosen according to our area of expertise or interest,
- the topic is introduced with a question,
- we search for key concepts and synonyms,
- we complement hierarchic relations,
- an unsuitable topic may be narrowed or expanded.

Recommended bibliography

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