Methology of Creation the Scientific Lecture

Methodology of creation for lecturers of professional lectures within the project *Training of farmers V4 in techniques for environmental   
protection and soil water*

VISEGRAD PROJECT No. 22020162

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# Basic characteristics of lecture

A note must be made at the beginning. If the following text is written about the listeners, we mean both women and men, without any preference for their gender. And now to the topic.

The lecture is one of the ways to take attention of students, how to tell them a certain amount of information, experience. The lecture itself in its classical form is necessary, but it does not force and encourage students to be more active or develop critical thinking. Students are mostly passive and their activity consists in many cases in the recording of notes, or only in listening or only in passive participation, with the fact that the student is engaged in a completely different activity, unrelated to the lecture. Today, when, for example, presentations are applied and these are sent to the listeners, then the recording of information is no longer necessary.

Despite this relatively negative introduction, it is necessary to admit that even a lecture can be created interesting, which will arouse the active interest of students, significantly will be helped by well-designed presentations. Therefore, in the following text, presentations will be often overlapped with the lecture.

The lecture provides students with professional instruction, explains the connections between phenomena, and popularizes new knowledge. The speaker acts as an expert. In the audience of students, those interested are familiar with the issue, but you can also meet those who dont know the issue, the topic and is new to them. They expect that the lecturer - the expert will teach them. This expectation can be met only by a speaker with very good knowledges of the issue. The lecture brings students information and helps them to form opinions on the issue. It not only offers possible "patterns of thinking", but also gives instructions for action.

It is certainly not out of the question provide the audience in advance with materials with information communicated at the lecture. During the lecture, students can ask questions, react, argue and discuss. This concept seems far more advantageous than just insisting on a strict lecture, without the listeners having space for their questions and suggestions.

We must first clarify what our goal is. We ask: What do we want to achieve with our listeners through our speech or performance? How would we like to influence the listeners? What information do I need to provide? Should we convince them of something, discourage them from something, warn them of something? Would we like to motivate them for something? How much time do we have for the lecture?

At the beginning, it is important to clarify whether we will focus on communicating new information or trying to influence the attitudes and opinions of listeners. Will we pass on only knowledge during the lecture, or will we try to get more activity from them? So are we going to ask for feedback?

The lecturer should master the topic in depth and breadth. He should know how he touches other areas, in which he intervenes in other fields.

## Advantages and disadvantages of lecture

It is necessary to mention the negative aspects of the lecture, such as the rapid loss of attention of students, disrespect for the learning styles of individual students and the inability to return to what was said. However, the lecture also has its undeniable positives. The greatest benefit from it can be enjoyed by students with a preference for auditory perception, with a high memory capacity, those who have already created a basic conceptual apparatus, know the topic and can therefore build on previous knowledge. Those who are able to make good and clear notes and can cope with possible information overload.

## Audience as target group

In order for a good quality lecture, it is necessary to know who it is intended for, who the listeners will be.

It is necessary to know what professional orientation the students have, their professional maturity. The speaker wonders if the topic has been already discussed and now is the time to go into a little detail, or is it necessary to create a speech aimed at introducing the topic?

What is the age of the listeners? In this context, it is necessary to remember how long the listener is able to keep his attention. The attention fluctuates significantly. Our nervous system also has certain protective mechanisms that prevent congestion. The brain needs to "rest" and "refresh" from time to time. This is normal and should be taken into account.

Furthermore, the lecturer asks about mental maturity. Are they individuals with a university degree, or are they high school students or practically oriented people?

# Attributes of scientific lecture

When preparing own topic, the lecturer starts by setting the goal. He will prepare the introduction and conclusion later. Now it is necessary to focus on preparing the content of your performance. The so-called mind maps, which will be discussed in more detail in the next section, will serve this very well.

## Structure of lecture

The lecture should be understandable and have a logical structure. Therefore, it must respect the known didactic principles:

• from simple to complex,

• from basic phenomena to secondary ones,

• from whole to part.

The following breakdown is recommended:

1. **Introduction** – the lecturer will explain the procedure of subsequent interpretation. In the introduction, he establishes contact with the listeners. It is possible to use helpful words, to address the listeners intimately, by pointing out a certain interesting thing. The goal is to get the listener for the topic.
2. **Section** – it is the distribution of ideas into partial logical parts, the presentation of one 's own knowledge and experience together with examples. It is appropriate to mention any objections and argue with them. It makes the lecture more interesting and lively. This also encourages critical thinking. Everything should be understandable, clear. If the topic allows, the basis is expressed, the essence in one sentence (password). Which is very suitable for creating memory tracks. Human memory likes to focus on passwords and words.
3. **Conclusion** – summarizes important parts of the content of the whole lecture. The lecturer will point out the theoretical and practical benefits for practice. Provides links to sources of information, literature and, where appropriate, methodological instructions for working with it. The conclusion should be very well and carefully elaborated, otherwise it can damage the overall good lecture if it is neglected, for example due to lack of time. The final impression affects the perception of the whole output, the speech. One remembers clearly what is at the end of an event. After completing your own lecture, it is important to give space for students' questions.

|  |  |  |
| --- | --- | --- |
| Introduction | In other words | Say, what you want to say! |
| Section | Say it! |
| Conclusion | Say, what you have said! |

The clarity of the lecture is increased by the lecturer's verbal warning of the transitions from one thematic area to another. For example: So far we have dealt with, discussed…, now let's move on to… , that's the end of the introductory part of the lecture, and now let's move on to our own problem…

When referring to a statement in spoken language, it is good to repeat that statement. In written form, this is not necessary, but it is appropriate for oral presentation, because the listeners could get lost in the lecture.

The lecturer should be careful not to use too long, incomprehensible sentences, unexpected and long inserts. Do not run away from the main line.

Again, something about attention: The attention of the listeners is strengthened by examples that are close to the listeners with whom they have their own experience. In general, the attention of listeners fluctuates. They are usually the most attentive at the beginning of the meeting. Some may even look forward, they may be curious not only about the topic itself, but also about the person of the lecturer, for example. Most of them also ask what they will get out of watching the teacher, what will it do for them? Therefore, it is good to insert information about the benefits immediately at the beginning - to entice students, participants of the event to concentrate.

How to proceed in creating a lecture (presentation), can be inspired by the statement of Rudyard Kipling, who said that he has six good servants, thanks to whom he knows a lot.

It is following questions:

* What?
* Why?
* Who?
* How?
* When?
* Where?

Attention! The maximum duration of the lecture, or part of it, should be 50 minutes without a break.

## Process of lecture

It is recommended that the professional lecture will be combined with a seminar form. To enable the final discussion and summary of the whole lecture.

## Atmosphere and climate of lecture

A quality lecture must be balanced in terms of the individual means used. It should contain some information, persuasion, fun, emotion, facts, overarching concepts, details, stories, arguments, a little monologue, a little dialogue. What affects the atmosphere and climate at the lecture?

Which factors **positively** affect the atmosphere and climate at the lecture?

• Credibility of the speaker

• Nature

• Dialogue, contact

• Respect for diversity

Which factors **negatively** affect the atmosphere and climate at the lecture?

• Pulling out

• Artifice

• "Freezing" gestures, behavior

• Little interest - in the listener, topic

The important thing is that the lecturer should always be natural and relaxed in his speeches. It is good to know a few types that have a positive effect on the audience, but the specificity of each lecturer is also in its peculiarities and its "imperfections". Therefore, many charismatic instructors are stuck in memory.

## Phenomenon-mind map

How to make work easier for yourself and your listeners? Learn to create mind maps. It represents a certain abbreviation of the topic. It should be clear, easy to remember, visually easy to read. And memorable.

### How to create a mind map?

1. The brain plays freely and non-violently with individual thoughts that are related to the chosen topic, thoughts flow freely. It is not so important in what order they come, in what form they are. Thoughts are written on paper. The main topic is written in the center of the paper and the individual "ideas" are marked around. The main theme is emphasized, for example, by putting an oval, a frame. Partial ideas are then attributed to it.
2. The connections between ideas are monitored. Related ideas are connected by individual lines. It is optimal if there are three to five clusters of ideas, fulcrums. If there are more, then they are used as subpoints of the main ideas. At this stage, unnecessary and superfluous ideas must a be removed.
3. The individual clusters of ideas are marked with Roman numerals in the order in which they will follow each other in the presentation. Already during the compilation of the mind map, it remembers with possible aids that will need to be used or that could improve the lecture.

## Presentation of topic

Suitable and available tools are chosen for the presentation. If the lecturer is used to use presentations via a PC, he should make sure that they are clear and beneficiary for the audience. When using numerical diagrams, the size of the numbers must be such that even those sitting in the last benches can read them without any problems. It is advisable to write the numbers more clearly and possibly differentiate them in color. A maximum of three colors are used, otherwise the data becomes confusing because the colors distract.

The text (on slides) in presentations should be written in the way that the information is presented on a maximum of six lines below each other and should not have more than six words in one line. The most sophisticated expression in the form of points is used.

### Paint pictures

Give the facts right at the beginning to engage your listeners and they will be interested and willing to pay attention. Arouse curiosity. Whoever is curious is careful. Provide surprising, interesting data, quotes, graphs, specific cases, stories, practical experience. Include rhetorical questions to provoke to give you answers. The brain then automatically looks for answers. This strengthens attention.

### Delete boredom

It is not bad if the teacher becomes a partial actor. It's good to be able to entertain the audience. People like to laugh. And whoever laughs doesn't fall asleep either. Therefore, choose suitable pictures when speaking, examples that will entertain others. It can be one's own practical experiences, film sequences, sound recordings and the like.

### Manipulate

This is not a "bad manipulation", when you want to put the other person at a disadvantage for him, and then humiliate him, make fun of him. This is a situation where the goal is that the listeners will remember something, it is emphasized that you only communicate it to them in confidence, only specifically to them. Keep light tension. Sentences such as: "I'll tell you something in a moment that will surely interest you, that will surprise you." will help you.

### Adjust the speed of speech

Every speech must mainly engage the audience. It has to get their attention. It is recommended to speak at a rate of 125 words per minute. One thinks at a speed of about 400 words per minute, which can be limitation.

## Summary - how to create a lecture

* **Define the purpose of the speech.** What you want to achieve with your performance. The theme and form of the presentation are chosen with respect to the audience. You ask about its composition, the current level of knowledge, age, composition by gender, number of listeners.
* **Create mind maps.** The individual clusters of thoughts are listed in the order in which they will follow in the presentation in roman numerals.
* **The structure of the speech.** The speech should have a structure – introduction, section and conclusion.
* **Consider using the equipment.** Remember a reasonable amount, expediency.
* **Include a variety of numeric diagrams.**
* **Possibility to create a presentation.** Pay attention to clarity, intelligibility, effectiveness. If possible, the presentation takes the form of passwords, points.

### Presentation scenario

1. **Introductory** **rituals** – greeting, addressing, thank you for participating.
2. **Goal and intent** – what the presentation will be about.
3. **Concepts** – choose a clear language, expression with regard to the target group, their maturity.
4. **Order** – program of the lecture, what will follow what, pauses, beginning and end of the lecture.
5. **Individual blocks**, **topics** – verify that listeners perceive and "move" with the speaker.
6. **Summary and conclusion**.
7. **Discussion and feedback** (Q&A, space for opinions of listeners, students).
8. **Subsequent steps** – when and where the next lecture will take place, which materials will be available, what students should prepare.
9. **Final rituals** – addressing, thanks giving, wishing, saying goodbye.

If something needs to be emphasised, it is finally inserted sentences. The listener perceives best and remembers best what is at the end, the end messages.

# Personality of lecturer

The personality of the lecturer significantly influences the listener. It affects its students, listeners not only through the content of the lecture, but non-verbal speeches, appearance also play an important role. This claim is supported by known facts.

It is reported that listeners are affected by:

* Words 7%
* Voice 38%
* Nonverbal manifestations 55%

If a speaker wants to have a positive effect on his audience, he can use certain tools called ISA.

* **I**mage of lecturer
* **S**kills of lecturer
* **A**tmosphere

## Image of lecturer

What goes with the speaker's image? These are a number of characteristics. Some are congenital, but many can be influenced, and many can be learned. These areprimarily:

### Personality and charisma

An interesting personality in the role of a lecturer attracts a lot of attention from the audience. It doesn't matter if the audience agrees with what he's saying. Even if they confront him with their opinions, he will leave an impression, he will be remembered in their memory.

### Knowledge of the resources used

This includes such skills as controlling the devices that are used, lighting, air conditioning or heating. If a person does not control these activities, he should have information about who will help him if necessary. It is certainly a pity if a malfunctioning technique has to be dealt with at the expense of one's own lecture.

## Skills of lecturer

How to make a favorable impression on the listener? The quality of our speech is influenced by communication skills that belong to **non-verbal communication**:

### Visual contact

2/3 of visual contact should be dedicated to listeners and 1/3 to the aids. The presentation using a PC should not be read, the lecturer only sticks to the items in the presentation, which are a skeleton for him and which he complements with additional information. The lecturer should be turned to the audience and not turn to the screen and thus turn his back on the audience. He only looks at the screen for inspection. It is very good to check the presentation on the monitor that the lecturer has in front of him.

### Facial expression

It is very important in communication with others, informs us about the mind movement of the communication partner.

### Position and movement

Both must be classified efficiently. Movements must be adequate to the situation. If possible, the swinging of the chair, the shuffling of the hands, the treadmping will be removed. Everything the lecturer does is supposed to give the impression that he has control over himself, that everything is as it should be.

### Gesture and proxemics

Gestika je také pro komunikaci velmi důležitá. Musí být přirozená a odpovídat situaci. Gesta, při kterých jsou vidět dlaně, působí na posluchače pozitivně. Signalizuji přízeň. Gesture is also very important for communication. It must be natural and match the situation. Gestures in which hands can be seen have a positive effect on the listener. I'm signaling favor.

### Working with voice - paralingutics

The basic tool of the lecturer is his voice (we are now looking away from the possibilities of alternative communication). The voice is a very fragile tool and deserves protection and care. Lecturers can be considered voice professionals and they have to take care of their voice, use it properly.

# Material didactic tools

For basic orientation, it is worth to remember what is used in the implementation of the lecture activity. Didactic tools are usually divided into material and intangable.

Intangable tools are:

* Lecture methods
* Organisational forms
* Teaching principles

Material didactic tools include:

* Technical tools
* Classrom and its equipment
* Didactic technique

## Selected teaching tools

In what they help: they promote clarity, the structure of the lecture, the interpretation becomes more interesting. It has a positive effect on the attention of the listeners if they are appropriately and in a reasonable amount included.

We choose them with regard to:

* Target group,
* Aim of presentation,
* Technical and spatial equipment,
* Place of lecture

The most often used are e.g. flipchart, data projector, laptop, sound system, etc.

### Flipchart

It has a similar use to stationary boards. The advantage is that it can stay in the room for a longer period of time and the recording is not deleted immediately after the lecture. It's also relatively easy to move to another location. Notes shall be made in a font which is legible, large enough to be read by the listener who sits in the farthest place.

### Dataprojector

It is mostly used together with the PC with which it is connected. Presentation programs such as MS PowerPoint are most commonly used.

A few notes on how to successfully use a PowerPoint presentation:

* Sufficient font size (at least 18 points).
* Use the fonts that are more readable.
* The entire paragraphs and sentences quoted are inappropriate. Better to make a record in the form of 6-8 bullets.
* Charts and tables must be displayed in sufficient size. It is advisable to highlight only the data that are essential. Otherwise, the comprehensibility of the data provided is reduced.
* Images can be used, but appropriately and up to one per frame. Otherwise, they unnecessarily attract the attention of students.
* Suitable colours are chosen that are in line with the topic discussed. It is advisable not to experiment too much, because what is easy to read on a PC monitor becomes unreadable on the screen.
* Individual images are projected long enough for the audience to orient themselves and understand the basic ideas.

## Recommendation for the tools usage

Tools, which are perceived very widely in this context, are very important for lectures. They must be used accordingly to the topic, listeners and possibilities of the lecturer. If a tool is to be used, the instructor must be able to use it. Otherwise, the aid becomes a dominant element in the "scene" and distracts from the content of the topic. On the other hand, you can't work without some of the help.

# Digital technologies and realization of on-line lecture

We include this chapter because it has a very close relationship to lecture activities. In the current pandemic situation related to the limitation of contact lectures, it is not impossible to implement lectures online in this project as well. Communication technologies are becoming a common part of it. In addition to the possibility of implementing lectures online, digital technologies allow to send electronic documents, allow communication of groups which arefocused on solving sub-tasks and so on

## Principles of electronic communication with lecture participants

The following methods are useful for cases where you need to communicate electronically with your listeners:

* **Skype** – Allows real-time communication with one or more participants at once. You can send text messages, use a voice, conference call, video call. You can transfer files through Skype.
* **Microsoft Teams** – allows you to realise lectures with a large number of listeners.
* **Zoom** – like Skype, it offers services such as videoconferencing, screen sharing, files, and so on. It also provides the possibility of working in a virtual team.
* **Facebook** – a worldwide social network. It offers the possibility not only to communicate, but also to create interest groups, share multimedia data, discuss with students and so on.
* **LinkedIn** – a social network designed primarily for professional contacts. It focuses primarily on maintaining contacts between former and current co-workers, searching for people with similar professional focus. It is also used in human resources, where, for example, new employees are searched and recruited.
* **Twitter** – a social network limited by a certain number of message characters. It is widespread mainly abroad. It is also communicated with by important persons, for example, related to politics.
* **Blog** – this is a web site that consists of a single user or group. This creates a certain internet notebook, where there are chronologically arranged articles with a similar topics. It also allows you to post your own posts on the Internet, encouraging visitors to comment on individual posts. This can be a stimulus for a more lively discussion of students, since communication is not one-sided, as is the case with sent study materials.

There are a large number of electronic communication tools and new ones are constantly being created, or existing ones are being improved and expanded. Therefore, the lecturer should know them and use them for his own benefit.