

Н.В. Патяева, Е.Б. Михайлова

# **ACADEMIC ENGLISH**

*Учебное пособие*

Нижний Новгород  
2024

Министерство науки и высшего образования Российской Федерации  
Федеральное государственное бюджетное образовательное учреждение высшего образования  
«Нижегородский государственный архитектурно-строительный университет»

Н.В. Патяева, Е.Б. Михайлова

## ACADEMIC ENGLISH

Утверждено редакционно-издательским советом университета  
в качестве учебного пособия

Нижний Новгород  
ННГАСУ  
2024

ББК 81.432.1  
П 20  
М 69  
УДК 811.111

*Печатается в авторской редакции*

Рецензенты:

*Орлова Л.Г.* – канд. филол. наук, доцент кафедры иностранных языков и конвенционной подготовки ФГБОУ ВО «Волжский государственный университет водного транспорта»

*Орлова Е.С.* – канд. пед. наук, доцент, зав. кафедрой английского языка для естественно-научных специальностей ФГАОУ ВО «Национальный исследовательский Нижегородский государственный ун-т им. Н.И. Лобачевского»

**Патяева, Н. В.** *Academic English : учебное пособие по английскому языку / Н.В. Патяева, Е.Б. Михайлова ; Министерство образования и науки Российской Федерации, Нижегородский государственный архитектурно-строительный университет. – Нижний Новгород : ННГАСУ, 2024. – 58 с. – ISBN 978-5-528-00563-8. – Текст : непосредственный.*

Учебное пособие представляет собой практический курс английского языка. Основной целью данного курса является формирование коммуникативной компетенции, которая в соответствии с ФГОС ВО для уровня магистратуры, определяется, как способность применять коммуникативные технологии, в том числе на иностранном языке, для академического и профессионального взаимодействия. Достижение поставленной цели обеспечивается комплексом проблемно-творческих заданий, стимулирующих интеллектуальную деятельность студентов и направленных на развитие навыков устной и письменной коммуникации в международной научной среде.

Предназначено для магистрантов всех специальностей неязыковых вузов.

ББК 81.432.1

ISBN 978-5-528-00563-8

© Н.В. Патяева, Е.Б. Михайлова,  
2024  
© ННГАСУ, 2024

## CONTENTS

<b>Unit 1</b>	<b>Higher Education System.....</b>	<b>4</b>
<b>Unit 2</b>	<b>Scientific Research .....</b>	<b>11</b>
<b>Unit 3</b>	<b>Communicating in Science.....</b>	<b>19</b>
<b>Unit 4</b>	<b>Reading a Research Paper .....</b>	<b>26</b>
<b>Unit 5</b>	<b>Writing a Research Paper.....</b>	<b>30</b>
<b>Appendix 1</b>	<b>Useful language for Presenting a Project.....</b>	<b>47</b>
<b>Appendix 2.</b>	<b>Feedback Form .....</b>	<b>48</b>
<b>Appendix 3</b>	<b>Texts.....</b>	<b>49</b>

## Unit 1. Higher Education System

### Vocabulary

#### 1. Match these English phrases (1-8) with Russian phrases (a-h).

1. to do (scientific) research	a. получить повышение
2. to get a promotion	b. стать компетентным специалистом
3. to become a scientist	c. углубить знания
4. to get new knowledge	d. получить степень магистра
5. to become a competent specialist	e. развивать себя как специалиста
6. to get a Master's degree	f. заниматься исследованиями
7. to advance in knowledge	g. получить новые знания
8. to develop oneself as a specialist	h. стать ученым

### *Planning a career in science*

#### 2. Use the words in vocabulary to answer the questions. Make notes.

- 1) Why did you choose a career in science?
- 2) What field of science are you currently working or studying in?
- 3) What would you like to do next in you work or studies?

#### 3. In pairs, take turn asking each other questions in ex.2 and giving a reply. Encourage a conversation.

#### 4. Read the text about American Education System. Use these words to help you:

Associate's Degree	степень младшего специалиста
Bachelor of Science / Arts	бакалавр
Master of Science / Arts	магистр
Ph.D., candidate of Science	кандидат наук

Specialist	специалист
Undergraduate	студент старших курсов
Graduate	выпускник
Postgraduate course	аспирантура
Professor	профессор
Associate professor	доцент
Doctor of science	доктор наук
Curriculum	учебный план / программа
Vocational training	профессиональная подготовка

### American Education System

Students in America are required to go to school between the ages of six and 18 in what are called grades, which run from first through 12th. (There is also an earlier option, called kindergarten, for the year before first grade, but it is not mandatory in most US states.)

Primary, or elementary, education lasts until fifth grade, middle school or junior high school covers sixth through eighth grade, followed by secondary education in ninth through 12th grades. Secondary education can cover both college-preparatory curriculum or vocational training.

After 12th grade, students have two options for post-secondary education: vocational training (typically a year or two, designed for immediate employment in a trade) or higher education (typically a two-year associate's degree or four-year bachelor's degree in an academic program).

**Read the first part of the text and fill in the gaps below**

Kindergarten	
1 year	
Primary / ..... School	
5 years	
..... / junior high school	
3 years	
.....	
4 years	
Post-secondary	
..... training	higher education
1-2 years	..... years

**Read the second part and fill in the table below. Make a similar table for Russia and then answer the questions.**

***What Are the Different Types of Higher Education Institutions in the US?***

***College vs. University***

In many countries, post-secondary institutions are called universities. However, in the US, the words *college* and *university* are often used interchangeably. Some are even called institutes (e.g., Massachusetts Institute of Technology, California Institute of Technology). Within larger universities in the United States, there are different colleges or schools that represent different academic areas of study (e.g., College of Engineering, School of Business).

***What Are the Different Education Levels and Degree Types at US Colleges and Universities?***

***Undergraduate***

Undergraduate studies can start immediately after secondary school. There are two main options: a two-year associate's degree and a four-year bachelor's degree.

Generally, associate's degrees are granted at two-year US community colleges, while bachelor's degrees are awarded from four-year colleges and universities. In both cases, students choose a focus for their academic studies called a major. In addition to courses in a major, students take required core curriculum or general education classes that develop critical thinking and communication skills.

***Graduate***

Graduate studies are only available to students who have completed a bachelor's degree. In many countries, graduate studies are called post-graduate studies and can take up to five years or more. In the US, the term *post-graduate studies* can

refer to work after a master's degree program, including studies for a doctoral degree.

Master's degrees can require one to two years of study. In the final term of most master's programs, students must complete a thesis (a large, well-documented essay) or a project before they will be awarded the master's degree.

***Doctoral degree*** (often called a PhD (doctor of philosophy) or EdD (doctor of education)) is the highest academic level of study offered in the United States.

The length of doctorate programs will depend on two things:

1. whether students must first complete a master's degree in a related field, and
2. how long it takes to complete a dissertation

Generally, if you have finished a master's degree and are then admitted to a doctoral program, the coursework will take two to three years. After finishing doctoral classes, you typically begin work on a dissertation or research paper/project that serves as the focus of your degree studies. With any paper or project, a faculty member will serve as a director or adviser.

### ***BA vs BS vs BFA Degrees***

When it comes to bachelor's degrees in the United States, the three most common are BA (bachelor of arts), BS (bachelor of science), and BFA (bachelor of fine arts). BA degrees focus on liberal arts majors in



humanities and social sciences, while BS degrees cover business, math, sciences, engineering, health sciences, and other tech fields. BFA degrees align with the creative arts, such as music or dance.



### *Higher Education in the US*

<i>Qualification</i>	<i>Category</i>	<i>Duration (full-time)</i>	<i>Place of study</i>
Associate's degree	undergraduate	2 years	Community college

### *Higher Education in Russia*

<i>Qualification</i>	<i>Category</i>	<i>Duration (full-time)</i>	<i>Place of study</i>

**5. Answer the questions.**

- 1) Is education system in the US similar to education system in Russia?
- 2) What is the name and qualification of your scientific advisor (supervisor)?
- 3) If you decided to study for science, which qualification would be best for you?

6. Eriko is from Japan and soon will complete a PhD in biotechnology in London. She is discussing the next stage in her career with her supervisor, Susana.

1) Read the part of their conversation and tick the options which interest her and put a cross next to the options which do not.

- teaching (undergraduate) students
- doing post-doctoral research
- supervising a research team
- finding a full-time position at the university
- discussing theory
- doing practical fieldwork
- finding a well-paid job

**Susana:** ... and have you thought about what you'll do once the PhD is finished?

**Eriko:** It's actually rather scary. I know I don't want to stop doing science and become an accountant, but beyond that ...

**Susana:** Well, let's start with a simple choice. Academia or industry?

**Eriko:** Oh, easy – academia. I've really enjoyed the teaching I've done, so I don't want to give that up.

**Susana:** But in industry you could supervise more junior researchers. You wouldn't have to give up teaching.

**Eriko:** No, but it's different. I find it really interesting to explain quite complex topics. Supervising people would be more practical. I really love communicating the theory side of things.

**Susana:** Well, yes... but I don't think working in industry would be completely different. You would also be out in the field more. Someone would pay you to go to real disasters to try the robots out.

**Eriko:** Hm. That's true. But I'm not so interested in doing that. As long as I have time to do work on developing the robots in the lab, that's fine for me. I do really want to teach though. I actually quite enjoy preparing lectures and thinking of creative ways to explain theory.

**Susana:** Really? OK, so suppose you go for academia...

**Eriko:** I'd like to get a post-doc position first.

**Susana:** So then you'd be looking at a full-time position in higher education?

**Eriko:** Yes.

**Susana:** And all the paperwork doesn't stop?

**Eriko:** Well. I don't actually mind it that much. So no, it doesn't bother me.

**Susana:** And the money? You're not attracted by the salaries in industry?

**Eriko:** Not at all. Well, maybe a bit. But there are more important things than money. I know I'm not going to get rich this way. But industry work? I really don't think it's for me.

**Susana:** But it's good to know there is as a possibility.

**Eriko:** That's true – if things don't work out...

- 2) **Do you agree with Eriko's words "But there are more important things that money"? Why? / Why not?**
- 3) **What will be the next stage in your career? Would you prefer to work in industry or at a university? Why?**

## Unit 2. Scientific Research

**1. Science has definitely changed people's lives. But is it always beneficial?**

**1) Can you think of negative aspects of science? Share your ideas with other students.**

**2) Read the text and compare it with your ideas.**

Science has brought an amazing revolution in human life. Modern man enjoys flying in the currents of air, swimming under the depths of ocean and walking on the roads



of space. At the same time science has made many lethal weapons for the purpose of total destruction and annihilation of humanity. Here is a depiction of bright side as well as dark side of science.

### *Advantages of science*

#### 1. Innovation and Industrialization

Science has brought innovation in every field of life. Distance learning, connected classroom technology and online courses have changed the concept of education. Modern tools are being used in investigation of diseases once were a challenge in health department. Technology is being shifted from garage to pocket due to innovative research done in scientific field.

Science has brought a great revolution in terms of economic progress due to industrialization. We have variety of things available at shopping malls and industrial outlets.

## 2. Surplus food

Stories of famine and droughts are now the part of ancient history. Science has accelerated production of cereals, fruits, meat and vegetables. Modern man enjoys a variety of edibles.

## 3. Fast travelling and communication

Modern ways of travelling have made this world a true global village. Aeroplanes, Air conditioned buses, ships and bullet trains have shortened the geographical distances. Modern man travels through oceans, air, mountains landscapes at a greater speed. Now the world is at the distance of click. Internet, Television, Radio and fax have enabled us to enjoy communication with global community just like our family members.

## 4. Problem solving technique

Scientific progress has changed our thought process. Modern man applies scientific approach to daily life problems. It has given us computational control over the world. Scientists are trying to control human mind which will be the last hit to scientific progress.

### ***Disadvantages of science***

#### 1. Unemployment

Solving a problem generates a new problem as a by-product. Industrialization has replaced human beings with machines. It has accelerated economic progress many fold but at the same time unemployment is increasing due to machines.

#### 2. Pollution

Industrialization has increased pollution level. Greenhouse effect has caused global warming which is a threat-call to our future. The world is consuming billions of dollars every year to neutralize or reverse this issue but the problem is still going out of control. Pollution is the by-product of scientific progress and industrialization.

### 3. Human annihilation

Scientific progress has made the world more divided and less stable as compared to the past. Modern man has invented atom bomb, hydrogen bomb and missile technology for the destruction of fellow beings. Developed countries are making these things to make their future more secure however these war heads are increasing feelings of insecurity across the globe.

### 4. Uncertain future

With the scientific progress our future is becoming uncertain and the world is becoming prone to 3rd world war as more and more flash points are emerging on the map of globe.

### ***Conclusion:***

The twisting nature of science leaves us clueless to guess whether we are making scientific progress to make this planet a heaven or this scientific progress in the long-run, is a mean to our total destruction and human annihilation to change this earth into hell. Time will answer this question.

(Adapted from <https://globalintelligentsia.com/science-advantages-disadvantages/> )

### **3) Match the words in columns as they are used in the text, translate them.**

1. change	a. a new problem
2. accelerate	b. atom bomb
3. shorten	c. global warming
4. apply	d. human beings with machines
5. control	e. pollution level / feelings of insecurity
6. generate	f. production of fruits / economic progress
7. replace	g. scientific approach to daily life problems
8. increase	h. the concept of education
9. cause	i. human mind
10.invent	j. the geographical distances
11.make	k. their future more secure

**4) Fill in the gaps with prepositions from the box. Check your answers in the text.**

at at due for from in in out of over through to
---

... the same time, ... the purpose, ... every field of life, shift ... garage ... pocket, ... terms of economic progress, ... to industrialization, available ... shopping malls, travel ... oceans, air, mountains, control ... the world, go ... control

**5) “Science has brought innovation in every field of life.” What about your professional sphere? Think how science has changed it over the past years.**

### *Applying for research fund*

**2. Match English phrases (1-8) with Russian phrases (a-h)**

1 scholarship	a лицо, дающее рекомендацию
2 outcome	b выдающийся
3 applicant	c стипендия
4 outstanding	d перемещение
5 relocation	e кандидат
6 to award	f обеспечивать покрытие
7 to cover	g присуждать
8 referee	h результат

**3. Read the following extract from a website and discuss the questions**

*The Sheridan Australian Research Fellowship (SARF) aims to develop science in Australia by attracting outstanding scientists in their field to continue their research in an Australian university or research institution. SARF fellowships are awarded to individual scientists with future potential for leadership in their field. Successful applicants for scholarship receive a 5-year grant covering salary, travel and relocation costs.*

- 1) Can an organization apply for this scholarship?
- 2) What are the advantages of attracting scientists “with future potential for leadership in their field” to a country?
- 3) Would you be interested in applying for SARF? Why/why not?
- 4) Have you ever applied for a scholarship? What did it involve?
- 5) What information might you need to include on your application form?

**4. Eriko has decided to apply to SARF and has downloaded an application form. Look at the list of sections on the form (1-10) and match each one to Eriko’s notes on the information she needed to provide (a-j).**

**SHERIDAN AUSTRALIAN RESEARCH FELLOWSHIP**

**Application Form**

1. applicant
2. current appointment and address
3. location of proposed study
4. sponsor’s recommendation
5. departmental support
6. project title
7. project summary
8. details of proposed research
9. budget
10. nominated referee with personal knowledge of applicant



- a. an explanation of how I'll do the research and why it is important
- b. a short description of what I'll research
- c. a statement from a senior researcher explaining why I'm a suitable applicant
- d. how much I plan to spend on my research
- e. the job I do now
- f. the name of someone to support my application
- g. what I'll call my research
- h. permission from my head of faculty to use his/her resources
- i. where I plan to study
- j. my personal info

**5. Section 7 of the form asks applicants to write *a project summary* of their research proposal.**

**Project Summary**

*Provide a brief summary of aims, significance, and expected outcomes of the research plan*

**Alina is an architect. She is also interested in applying for a research fund.**

**1) Read Alina's project summary and answer the following questions.**

- 1) What is the aim of her research?
- 2) What problem does she try to solve?
- 3) Why is her topic worth researching?
- 4) What are the expected outcomes of her research?
- 5) What do you think might be the commercial applications Alina's research?

### **Architectural morphology in the context of impossible forms**

In the pursuit of entertainment and external effects modern architecture creates fantastic shapes and an illusory composition: modern drop-type and blot-type buildings, labyrinths, in which impossible figures can be guessed, can confuse and arouse interest.

**On the one hand** this situation is mostly connected with rapidly developing technologies that are introduced in design, making projects and creating new architectural structures.

**On the other hand** in modern scientific knowledge, space is not perceived as single and simple, defined by three straight lines, but as irregular, unexpected, distorted. **That is why** the term "impossible figure" has appeared.

The impossible figure is a type of optical illusion. It consists of a two-dimensional figure, which is instantly interpreted as a three-dimensional object [4]. There are many different techniques to create illusions in architecture.

**However**, there is little knowledge about visual illusions in architectural composition and modern architecture theory.

**The proposed research will concentrate on** new geometric theories and methods like geometry of Lobachevsky and many others which have become popular among architects. They create new strategy of understanding architectural forms, environment and morphology.

**This strategy will help to build** structures, which create an optical illusion, disorient the person and move him into another space. Simple buildings seem to be multi-level. **To add to this** one more dimension in optical illusion is introduced by electronics. **For example**, a building with a media facade. **Due to this** it is impossible to understand how many floors there are in the building. In the daytime the facade looks like an absolutely smooth mirror

surface, and in the evening some patterns appear on the surface due to the illumination system.

***This research aims to identify*** the role of visual illusions in architectural composition.

***The work should justify*** recommendations to take into consideration more than one plane for full analysis of the building structure and to look at the entire architectural morphology anew.

**2) Write out the linking words and useful phrases from the summary. Translate them into Russian.**

**6. Think about a research project in your area. Summarise the project following instructions below.**

- a) State the aims of your research
- b) Define what the problem is
- c) Explain why your topic is worth researching
- d) Say what the expected outcomes of the research are
- e) Outline the procedures you will follow

**7. Write a short project summary for your research according to the instructions above. Use written out phrases and linking words in your project summary.**

## Unit 3. Communicating in Science

### Vocabulary

#### 1. Match these English phrases (1-8) with Russian phrases (a-h)

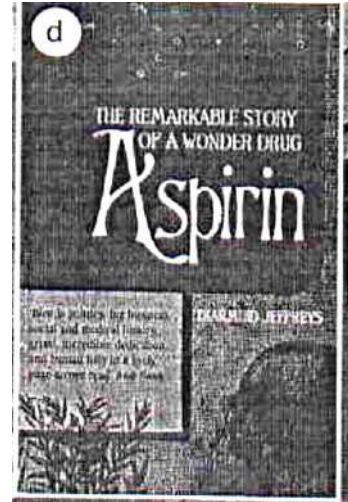
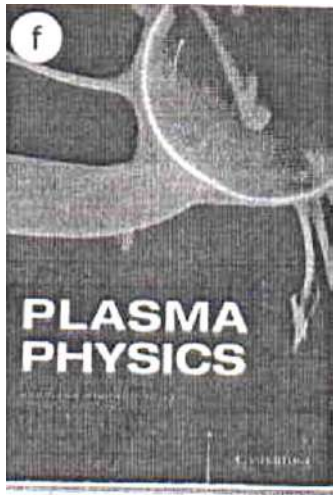
1. overview	a. аудитория / слушатели
2. audience	b. обобщить
3. visual support	с. внимание
4. attention	d. представить
5. to emphasize	e. визуальная поддержка
6. to provide	f. обеспечить
7. to summarise	g. обзор
8. requirements	h. подчеркнуть
9. to introduce	i. требования

### *Communicating with scientific communities*

#### 2. Match the methods of communication (1-6) to the following sources of information (a-f).

1. an academic journal
2. a conference
3. an online forum or science blog
4. a popular science magazine
5. a popular science book
6. a newspaper





Which of these ways do you usually use to communicate?

**3. In pairs, discuss the questions.**

- 1) Who did you last communicate with about your scientific work?
- 2) Did you have any difficulties in the communication? If so, how did you solve them?

***Presentation skills***

**4. Work in pairs. Read the quotation and discuss the questions. Do you agree with the quotation? Why/Why not?**

*A man who cannot speak well will never make a career.* (Anonymous)

**5. Think of a presentation you have given recently. Complete the questionnaire Write *yes* or *no* below next to each question.**

*Do you...*

- 1) *prepare thoroughly: check the meaning and pronunciation of new words, create slides, rehearse the speech, etc.?*
- 2) *start the talk in an interesting way to get the attention of the audience?*

- 3)  *speak from notes rather than read a whole text?*
- 4)  *give an overview of your talk at the beginning?*
- 5)  *use phrases to help the audience follow your ideas?*
- 6)  *provide examples to illustrate complex and/or original ideas?*
- 7) provide visual support?
- 8) invite the audience to ask questions?
- 9) emphasise the main points by slowing down and leaving pauses?
- 10) make eye contact with your audience?
- 11) use effective gestures?

**6. How many positive answers have you got? What would you like to improve?**

***Presentation goal.***

***Tip:***

The structure, style, and delivery of a presentation depend on its goals. There are normally several goals, but it is possible to choose a primary one.

**7. Match events 1–5, which involve speaking in public, to definitions a-h.**

1. lecture	a. an occasion when a teacher or expert and a group of people meet to study and discuss something
2. demonstration	b. a formal talk on serious subject given to group of people, especially students
3. seminar	c. a talk describing a product that can be bought
4. conference presentation	d. the act of showing someone how to do something or how something works
5. commercial presentation	e. a talk to people of the same field, usually about your research

**What kind of talk have you given? What was your audience?**

*Presentation structure*

**8. Put the stages of a presentation (a-i) in a logical order (different answers may be possible).**

a. present the main body of the talk	g. have a strong ending
b. handle questions	h. introduce the presentation topic and objectives
c. signal the beginning of the talk	i. outline the presentation structure
d. greet the audience	j. thank the audience
e. summarise the main points	k. say when you would like to take questions
f. introduce yourself	

**Is the structure of a Bachelor's / Master's degree project presentation different from the structure of a conference presentation?**

*Presenting a project*

**9. Look at the phrases below. Are they used to: introduce yourself (Y), introduce the subject of your research (S), explain the goals of the research (G), underline the relevance (R), describe the experiment (E), make a conclusion (C) or deal with questions (Q)?**

- 1) My study deals with the problems of.../is devoted to the investigation of...
- 2) I am a student at the department of .. .
- 3) That completes my presentation. Thank you.
- 4) I'll be happy to answer questions at the end.
- 5) I think the results of the work will be of considerable practical significance, because ...
- 6) My major interest is in the field of....

- 7) The main purpose/aim of my research is...to find out/to define/to characterize/ explore/ to investigate/to analyse/to gain/.....
- 8) To sum up, I would like to say that .....
- 9) The focus of my research is on.....
- 10) My scientific advisor is Prof....
- 11) The methods and techniques we apply in this research include experiments (observations, laboratory tests, field and pilot plant study,...)
- 12) I am currently doing my bachelor's / master's degree in..... studies

**To check your answers see Appendix 1 *Useful language for presenting a project.***

### *Working with visuals*

**10. Work in groups. Think about presentations you have seen at conferences. Create a list of *dos* and *don'ts* for an effective slide-based presentation.**

Do	Don't
<ul style="list-style-type: none"> <li>• give a title to each slide</li> </ul>	<ul style="list-style-type: none"> <li>• use complete sentences</li> </ul>



**11. Read the text about creating presentation slides and fill in the gaps with the words and expressions from the box.**

When you create slides, you should follow certain requirements. The first slide usually contains <sup>1</sup> ..... . The second slide shows your presentation plan and objectives. The presentation follows a 3.3 rule, which means<sup>2</sup> .....

It is also important to have a slide with the summary of your presentation and conclusions or results. The last slide contains <sup>3</sup> ..... if anyone would like to contact you afterwards. You should remember that each slide illustrates only one topic.

The titles of the slides should be short, not more than <sup>4</sup> ..... words written in the same style: either all questions or similar phrases. The bulleted lists in the body-do not contain full sentences. Usually there are 5 – 6 words per line.

The number of lines on a slide is normally <sup>5</sup> ..... to make it easy for the listeners to follow your ideas. The font <sup>6</sup> ..... is often used for titles.

For the text on slides suitable fonts are <sup>7</sup> ..... The text can be accompanied with visuals, but the common rule for slides is 'less is more'.

You can estimate the number of slides if you use the following method:<sup>8</sup>....., where  $n$  is the number of slides and  $t$  is the time. The beginning should not take longer than <sup>9</sup> ..... seconds. If you want to take questions at the end you should leave about 25% of your time for them.

a. Arial or Tahoma 28-32.	f. 3 or 4
b. $n=t/2$	g. three parts - an introduction, a body with three main points in it and a conclusion
c. "thank-you" and your contact details	h. 2-5
d. 90	i. Verdana size 40
e. the title of your presentation, your name and the name of the event with date	

**12. In pairs, compare your texts. What information is new for you?**

**13. Prepare a presentation of your project.**

- write a plan using your project summary from Unit 2
- write the text of your presentation. Pay attention to the structure and use the phrases from Appendix 1 *Useful language for presenting a project*
- check the text for any mistakes
- prepare the slides
- practice the text and make sure you don't speak for more than 5 min.

**14. Take turns to listen to your colleagues' presentations and ask questions if appropriate. Give your colleagues some feedback using the Feedback Form in Appendix 2.**

## Unit 4. Reading a Research Paper

### Vocabulary

#### 1. Match these English phrases (1-8) with Russian phrases (a-h)

1 research paper	a цель
2 evaluate	b осуществлять, выполнять
3 to consider	c проводить научное исследование
4 investigation	d оценивать
5 to conduct research	e обнаруживать, выявлять,
6 aim	f рассматривать
7 to search	g актуальность
8 to implement	h научная статья
9 relevance	i исследование
10 to reveal	j искать

#### 2. Do you read popular science articles? Why? On what occasions?

The passages below refer to the article *“The history of architecture and urban planning in the city of Gorky in the period from 1955 to 1975”*.

**Read the passages A – G and match them to these sections of the article.**

**What helps you decide? Put the passages in the right order (from 1 to 7).**

- 1) Introduction/ general information
- 2) Description/ purpose of the research
- 3) Findings
- 4) Researcher’s comments and conclusion

A The architects began to design new neighborhoods and thus new look of the city started forming. The design of new neighborhoods was carried out according to principle "svobodnaya planning" (a random placement of buildings) (the middle of the 1950s – the end of the 1970-ies) [1].

B Public buildings of the period under study can be divided in two types. Some of them reflect the Soviet Union's trends of that period, the others were notable for their regional features. Public education buildings (schools, kindergartens) were built using standard projects and developed series. Administrative buildings, theatres and cinemas, train stations and cafes gained its uniqueness due to vertical segmentation of facades by pylons (the building of the Moscow Railway Station), symmetry, austerity and monumentality of forms and etc.

C The architecture and urban planning in the period from 1955 to 1975 present a special interest for the history of the city of Nizhny Novgorod (in the past named Gorky). The era of standardization and typification, engineering approach to the design of houses and neighborhoods, the creation of new methods of construction - all these allowed to change the appearance of the city significantly and to create a new architectural environment. We can see it in Nizhny Novgorod these days. This period has not been investigated in details before, and this fact allows to speak about relevance of the topic.

D Architecture and urban planning of the middle of the 1950s - the end of the 1970s are important for the history of architecture of the city. Obtained during the study information will allow to create the most complete picture of the regional architectural characteristics of the "capital" of the Volga region.

E The conducted research will allow to expand the field of knowledge relating to the period of development of the regional architecture of Nizhny Novgorod in the period from 1955 to 1975. The study will help to identify and explore the principles of planning and development of the city, the techniques of stylistic and compositional organization of the architecture. The results of the research can assist in the design of contemporary buildings. Moreover, research can be useful for solving problems of reconstruction of existing buildings constructed during the period under study.

F The aim of my research is to describe peculiarities of architecture and urban planning of the city of Gorky in the period under study. To attain the aim, it is necessary to implement the following tasks: firstly, to study the domestic experience of construction in the period from 1955 to 1975; secondly, to analyze urban planning of Gorky in this period, to investigate general and individual features of the development of neighborhoods in the planning structure of the city; thirdly, to identify the features of the residential architecture on the basis of standard design in the city of Gorky and to examine architecture of public buildings in the city of Gorky; fourthly, to consider the current state of architecture and to evaluate creativity of leading Gorky architects in the period under study.

G The study of architectural solutions of residential houses allowed to talk about the existence of different standard designs. According to materials of archives of Nizhny Novgorod [5, 6] there were discovered some of the most used series of houses (different variations of series 1-464, 1-466 of big-blocks and variations of series 1-447 of brick). Also, new methods of construction of the period under study were revealed. Method of Big-block standard

residential house construction and method of «narodnaya stroyka» can be referred to them. The method of Big-block standard residential house construction was developed and firstly used in Nizhny Novgorod. The method of «narodnaya stroyka» was created in this period in the city and later was used across the country.

**3. Read the whole article again and write down the words and expressions describing each section of the article. Translate them into Russian.**

*Example: presents a special interest- представляет особый интерес*  
(Introduction)...

**4. Find a research paper in English on the topic of your investigation. The authors of the papers should be from English- speaking countries. The article should be 4000 letters.**

- 1) Read the article, decide, what section (introduction/ general information, description/ (purposes) of the research, findings, researcher's comments and conclusion) it is.
- 2) Write out unknown words and terms, write their transcription and translation into Russian.
- 3) Prepare to discuss the paper content with the teacher. Think how this research paper can help you in your research.

## Unit 5. Writing a Research Paper

### Vocabulary

#### 1. Match these English phrases (1-10) with Russian equivalents (a-j).

1. abstract	a. предложение, соображение
2. background information	b. акцент
3. to cover	с. ссылки на литературу
4. hypothesis	d. аннотация
5. deals with	e. наблюдать
6. title	f. иметь дело, рассматривать
7. to observe	g. гипотеза
8. suggestion	h. название
9. reference	i. исходная информация
10. emphasis	j. включать, освещать

### Writing an abstract of the research paper

An **abstract** is a shortened version of the paper written for people who may never read the full version. Since abstracts are often reprinted in abstracting journals separated from the original paper, they need to be self-explanatory.

#### 2. In pairs, discuss the questions.

- 1) What is the purpose of an abstract?
- 2) How can an abstract help a researcher choose which papers to read?
- 3) What information does the abstract usually include?

Work in pairs and make a list of points that an abstract should include  
(check your ideas on page 31 )

- 4) Why do some people think a good abstract is even more important in the internet age than it was before?

The abstract **should include**:

1. description of the main topic, problems of the scientific article;
2. work goals;
3. the results obtained;
4. what new is in this article in comparison with the others related in topic and purpose.

**3. Write an abstract for any research paper in Appendix 3. Use Sample phrases from the table below.**

*Sample phrases you can use in abstracts*

*The theme of the paper is .....*

*The paper deals with the field of ..... / is devoted to .....*

*The paper tackles the problem of..... / gives explanation about .....*

*The author covers the following issues:.....*

*The problem of ..... is observed here*

*Firstly, the author analyses / lays special emphasis on .....*

*Secondly, the paper gives information / contains the description .....,*

*Then, it is pointed out that / it is stressed that .....*

*Finally, it is stated .....*

*Choosing Keywords for Your Scientific Manuscript*

**4. Most journals usually ask the authors to present keywords that are placed after the abstract. What is their function?**

**Keywords** are scientific terms that present a perfect summary or key to your study, and it is of utmost importance to provide other researchers with an opportunity to find your paper by choosing the right keywords.



**1) How would you choose the keywords for your article?**

**2) Read the following tips given by the medical researcher and compare them with your ideas.**

These 6 tips will help you stay focused when determining which keywords to include in your paper.

**1. Include your techniques and/or specific methodology.**

The most important experimental techniques used in your article are worth considering as keywords, for example, X-ray crystallography, Immunohistochemistry, Real-time PCR, etc.

**2. Focus on the main topic of your research.**

For example, if your research is based on diabetes, possible keywords could be blood glucose, insulin, glucometer, etc. Just remember to be specific enough that your main area of research is included.

**3. Avoid keywords that are only one word.**

Ensure that the keywords that you select are not too long but also not too short. For example, if your research is on pediatric diabetes, use long tail keywords that are relevant to your study. In this case, 'blood glucose' or 'insulin' may be too broad, and your paper would be lost in a sea of papers on diabetes.

**4. Avoid overlapping keywords in your title and those in your keyword list.**

Don't waste keyword space on words used in your title. Instead, make sure your title utilizes appropriate keywords on your topic that can supplement your keyword list (for example, "The effect of insulin inhibitors on pediatric diabetes in children from 10-12 years old").

**5. Follow the journal guidelines when selecting keywords.**

Every journal has certain specifications when it comes to selecting keywords. Additionally, most journals ask the authors to present 5-8 of the most suitable keywords that will enable the publisher and databases

to organize the scholarly content. So, be sure to follow their guidelines appropriately.

### **6. Perform keyword research before submitting your article.**

Do a search yourself using the keywords you intend to submit with your article. Do these keywords pull up articles that are very similar to your own? Or, do you need to tailor your keywords more specifically?

This technique will also give you insight into your competition. For example, which keywords do those papers use that you want to compete with?

Including appropriate keywords in your paper helps indexers and search engines find your paper, thus allowing it to appear at the top in search results. Every researcher should want their research to land at the top of search results so that it can make the highest possible impact.

(Adapted from <https://falconediting.com/en/blog/6-tips-for-choosing-keywords-for-your-scientific-manuscript/>)

### **3) Choose the keywords for the text in Appendix 3 using the tips above.**

#### *The structure of a research paper*

**5.** Research papers are generally written for scientists working in the same field and can appear in specialist journals or be presented at conferences.

Have you ever written a research paper? When? What was it about?

There are normally 8 sections in a research paper or scientific report, and they usually follow each other in a fixed sequence.

**1) Read the description of all the sections and say if your research paper had all of them. Which section was the most difficult to write? Why? (If you have never written a research paper, think what section *would* be the most difficult to write).**

**Title**

It must precisely describe the report's contents

**Abstract**

A brief overview of the report

**Introduction**

Includes the purpose of the research

States the hypothesis

Gives any necessary background information

**Methods and materials**

Provides a description of material, equipment and methods used in the research

**Results**

States the results of the research. Visual materials are included here.

**Discussion**

Evaluation and interpretation

Was the hypothesis supported? If so, how? If not, why not? Relevant results are described in support.

**Conclusion**

Conclusions to be drawn from the results

Conclusions about the hypothesis

Additional research proposed

**References cited**

A list of the references includes references to any works cited in the review of literature.

***Planning your Writing***

A primary tool for a writer is making a plan before starting to write.

**2) Work in pairs and complete the list of reasons for writing a plan.**

Planning enables you to:

- 1) organise your thoughts efficiently,
- 2)
- 3)
- 4)
- 5)

**3) There are different kinds of plans. Match the types of plans with their descriptions. What kind of plan do you usually write? Why?**

I. <b>A simple plan</b>	a. Below the main points, you can list more specific points. Generally you do not have to be over-specific, but this is a way of making sure that the detailed points you want to make are not forgotten.
II. <b>A complete plan</b>	b. A simple sentence summarising the main point of each paragraph and section. These give you direction, and can sometimes form <i>the first or 'topic' sentences</i> of your paragraphs.
III. <b>A question plan</b>	c. Only the main points are written in an order that best serves the argument and information sharing of the paper.
V. <b>A sentence plan</b>	d. In these you write down the questions that you are trying to answer at each stage of your work. This form helps you to understand the reader's position and may help focus the plan and organize your strategy.

**4) Write a plan for your research paper**

### *Introductions to research papers*

Introductions to scientific research papers are direct and to the point, maybe only one paragraph long. What do you need to write there?

**5) Read the following suggestions and compare with your ideas.**

You need to

- \* tell the reader what the paper is about
- \* say what the paper contains and says
- \* explain why what it says is important and worth reading

**6) Read the example of an introduction to a research paper and underline linking words and helpful phrases that you can use in introductions.**

#### *Example of an introduction to a research paper*

There is a rising problem that public spaces are increasingly being neglected in many new construction projects. Even existing public spaces are also suffering from aggressive re-purposing into commercial objects like office buildings and apartment complexes. This article aims to justify the importance of public spaces for people. This is attempted by first defining the term “public spaces”. Then the article lists the desirable characteristics of a good public space. Finally, the emphasis is laid on the need to have public spaces.

**7) Read the example of an introduction again. Does it cover the points listed in ex. 5?**

**8) Write the introduction to your research paper. Use the following sample phrases.**

## Sample phrases you can use in introductions

### ***Stating your purpose***

*In this paper, it will be shown that/*

*In this paper, ... will be discussed / are considered.*

*The present paper examines / presents/ aims to/ lists ...*

*In this article, we report on ...*

*Our / My intention here is to highlight ...*

*In the following pages, we shall propose ...*

*This article will concentrate / focus on the arguments ...*

*The key question that this article will address is whether ...*

*This paper will report on work already carried out in this area.*

### ***Relating your paper to current work***

*In recent years, ... has become a topic of lively debate.*

*The issue of ... has become controversial recently.*

*The question of ... has been thoroughly researched over the last few years.*

*There is a rising problem that.....*

### ***Indicating the structure of your paper***

*The article has (6) main sections.*

*Firstly, we shall examine the question of ...*

*The next section briefly outlines ...*

*Then/ After a short discussion of ..., an overview of ... will be given.*

*This will be followed by ...*

*The final section will present ...*

*Finally, the emphasis is laid on ...*

*I / We shall then go on to suggest ...*

### *The main body of a research paper*

Between the Introduction and the Conclusion, the main body of a research paper normally consists of three sections.

**9) Read the description of each section. Are you are going to include all of them in your research paper? If not, why?**

#### **Methods and Materials**

In this section the researcher answers the following questions:

<b>Where?</b>	Location of the work, if relevant.
<b>What?</b>	What equipment and other materials were used in the research. They need to be thoroughly specified.
<b>How?</b>	The procedures and methods used in the research. Every detail should be included.

#### **Results**

This section follows Methods and Materials.

In this section you present the precise data and findings from the research, often using visuals to provide the information.

Data may be effectively presented in charts, tables, graphs, diagrams and photographs. These should be accompanied by explanatory text to highlight and interpret significant facts.

#### **Discussion**

This section follows Results.

In this section you write about your interpretation of your findings and your evaluation of the research.

In particular, you give your opinion as to whether the work supported and proved your hypothesis, or whether it did not.

**10) Write the main body of your research paper using the ideas above.**

***Research paper conclusions***

In a research paper 'Conclusions' is a separate section, as is the Introduction.

It usually contains four straightforward elements:

- 1) Conclusions about the hypothesis posed in the introduction (Did the hypothesis prove to be correct or incorrect? How? Why?)
- 2) Results of the research – and their theoretical implications (What did the research actually reveal? What was observed?)
- 3) Possible hypotheses raised by the results (What questions do the results raise? What possible answers or explanations can be hypothesised?)
- 4) Specific lines of additional research raised by the results (At each step of the research new questions arose; how might they be answered or explained?)

**11) Write a conclusion to your research paper. Use Sample phrases from the box below.**

**Sample phrases you can use in conclusions**

***Summarising what you have done***

*In conclusion, we can say that ...*

*In this paper, we have seen that ...*

*This research paper has clearly shown that ...*



*The discussion in this article has given an overview of ...*

*This paper has provided a systematic study of ...*

*From the research that has been carried out, we can conclude that ...*

*The aim of the present paper was to examine whether ... and this has now been achieved.*

*Finally, it is worth pointing out that ...*

### ***Indicating the limitations of your own work***

*This article has only been able to touch on the most general features of ...*

*Even a preliminary study, such as the one reported here, has highlighted the need for ...*

### ***Looking to the future and further research***

*Clearly, further studies are needed to understand / prove ...*

*In order to validate the work we have carried out, a more in-depth investigation into ... is needed.*

## ***Giving a title to your paper***

**12) Read seven suggestions for writing the title of a research paper. Which suggestion should you use to write a good title? Which suggestions don't give good advice?**

- 1) Make it about 50 words long
- 2) Write it as a question
- 3) Begin with a phrase like "A study of ..." or "An investigation into ..."
- 4) Include a joke or play on words
- 5) Include important key words for internet search tools
- 6) Include information such as the species studied, the treatment used, etc.
- 7) Present the key result

**13) Work in pairs. Discuss the following titles for the article about Mars, decide which title you think would be the best.**

- A. Is there life on Mars?
- B. Are there any features on Mars that could provide protection against the severe surface conditions?
- C. An investigation into whether Mars's surface material could provide protection for organisms
- D. Protection for *Acidithiobacillus ferrooxidans* and *Deinococcus radiodurans* exposed to simulated Mars environmental conditions by surface material

**14) Read the dialogue. Make a list of recommendations “How to give a title to your paper” using ideas from the conversation.**

*Mya:* So, I have a few ideas for titles, but I don't know which is best.

*Steve:* OK, let's have a look then. Right, well, this first one, “Is there life on Mars?” is no good.

*Mya:* Yeah, I didn't think it would really be suitable, but I thought it was good to have something catchy, jokey though, with a fun reference.

*Steve:* Well, I don't know if that's true really. Look at this way, will all your intended audience understand the reference you're making? If they do, well, they'll laugh ... but if they don't get the joke, your title will be extremely vague.

*Mya:* That's true, I guess.

*Steve:* And looked at another way, who is going to find it when they're searching the online journals?

*Mya:* Well, someone who looks for “life” and “Mars”?

*Steve:* But would someone in the field search for such vague terms? Your title needs to contain the important keywords that someone would search for – otherwise it won't be found.

**Mya:** OK, so how about my second one: “Are there any features on Mars that could provide protection against the severe surface conditions?” It’s got the idea of Mars, protection, the severe conditions ...

**Steve:** Yes, that’s true, but it’s still rather vague. It seems that what you’ve done here is just use your research question as your title.

**Mya:** I thought that would be a good idea. I mean, that tells people what I was looking at.

**Steve:** Yes, but that title could have been written before you did the research and anyone could ask a question: “Can you now, after your studies, give us an answer to the question?” So, instead of using the question you asked as your title, write a statement telling the reader what your key result was. That’s much more informative.

**Mya:** So this one – “An investigation into whether Mars’s surface material could provide protection for organisms” – is better. It explains the key finding. I mean, it sums up the content.

**Steve:** Well, it does to an extent, but it’s still a little imprecise. Protection for organisms? For dogs? Cats? Humans?

**Mya:** For some organisms?

**Steve:** Why not tell us which ones? It’s often good to include details like the species studied, or if you’re focusing on one field location, the place – things like that are important. Also “protection”. Protection from the rain? Say what they’re protected from.

**Mya:** Oh, I thought it would be confusing if I used too many technical terms.

**Steve:** Yes, you’re right, being too technical isn’t good – but this isn’t jargon, it’s detail. And again, “an investigation into” tells us what you did, not what you found. Try to avoid starting with phrases like “an observation of” or “a study of”. Your next suggestion “Protection for *Acidithiobacillus ferrooxidans* and *Deinococcus radiodurans* exposed to simulated Mars environmental conditions by surface material” is much, much better.

*Mya:* But it's too long?

Steve: No, I don't think so. I mean it tells us about key findings – what you found, in what organisms, under what conditions – it's probably the best of the lot. It really does enclose what the content is ... yes, it's the best.

*Mya:* So maybe it's a good idea to write out what the key finding is and then use that to form the title?

*Steve:* Yes, often you'll then just need to use more nouns ... to make it more like a title and less like a sentence.

Have you changed your mind about which titles are helpful to the reader?

**15) Read the research paper for students' conference. Give the title to it using the rules above.**

There is a rising problem that public spaces are increasingly being neglected in many new construction projects. Even existing public spaces are also suffering from aggressive re-purposing into commercial objects like office buildings and apartment complexes. This article aims to justify the importance of public spaces for people. This is attempted by first defining the term "public spaces". Then the article lists the desirable characteristics of a good public space. Finally, the emphasis is laid on the need to have public spaces.

There are many definitions of a public space. This one is the most appropriate for the research : "A place where everyone has the right to come without being excluded because of social or economic conditions (payment of an entrance fee, membership fee or fulfillment of any other prerequisite condition)"<sup>1</sup>. Examples of public spaces include parks, squares, sports grounds, markets and communication spaces like roads, alleys and bridges.

What makes a public space good or successful? When a public space is created, three questions should be taken into consideration: if there is a good balance of gender, age, social groups; if the place is welcoming and the local community -friendly and tourists-friendly; if the locals take pride to have it in their community.

Moreover, a successful public place is usually:

- unique- it has some feature or activity that it can be identified with;
- accessible- it is easy to get to and it is connected to other parts of the community;
- safe- it is protected from vehicular traffic, from threat of personal injury and from criminal activity;
- comfortable- it has seating benches, shading from the natural elements like sunlight, wind and rain. It also has insulation from the surrounding hustle and bustle of daily scenes;
- interactive passively- it has fountains, statues, etc.;
- interactive actively- it has playgrounds, bike rinks, kart racing circuits, cafés, etc.;
- aesthetically pleasing - public spaces are greatly judged by their appearances.

The characteristics mentioned above are all from the point of view of the developer or designer or architect. The community, as a rule, must also be involved in creating these spaces. If the community is not involved in the process of creation, these places will be deserted and be just empty shells.

We need to keep in mind though, that a new public space needs time to mature to become successful and eventually be filled with human activities.

Why do we need public spaces?

Public spaces enhance our well being

This is especially true in the city environment. It does not really apply to rural settings. Public spaces like parks mitigate air and noise pollution. Water fronts in some instances are also used as defenses to protect people from flooding.

Public spaces build a sense of community, civic identity and culture and promotes social cohesion

On its own account, a park cannot build a community as previously mentioned. It is the people who create and build communities by participating in daily activities and events. The public space merely provides a conducive environment for them. A good public space can and will inspire and attract citizens to come together and interact in that space.

Public spaces have the ability to drive economic growth

The obvious examples are markets, yamarka, shopping malls where physical money changes hands and deals are struck.

A study by the UN Habitat established a strong correlation between the amount of land allocated to public spaces in a city to the development of that city. The report recommends that as much as 45% - 50% of the city land should be allocated for public spaces; 30% -35% of which should be for streets and the remaining 15% - 20% for open spaces.

Public spaces can transform wasted space

Abandoned and wasted spaces take on a new life and stimulate economic growth.

Good public spaces give character and enhance architectural diversity

In a concrete jungle a dash of colour, some comedic relief, fake historical tiny buildings can give some diversity and uniqueness to the architecture of the city.

To sum up, the answer to the question: “Do people need public spaces?” is an emphatic YES! People do need public spaces. The absence or limited availability of public spaces leads to disharmony among people and low levels of community participation and patriotism. It also fosters the growth of narcissistic behaviors, crumbling of human empathy, ecological and environmental degradation, difficulties to travel from one place to another, physiological and psychological stress and low citizen morale. All these lead to low productivity and hence negative economic growth.

It is a duty of architects as future professionals to protect public spaces from the forces that would like to destroy them or otherwise render them unusable. Architects need to protect public spaces, improve them and adapt them so that they can survive for the generations coming after to enjoy the benefits as well.

**16) Discuss the titles as a class, choose the most suitable title, justify your choice.**

**17) Write the most helpful to the reader title for your research paper.**

## Appendix 1

### Useful language for presenting a project

(Y)	<p><b>First, let me introduce myself.</b>          My name is...          I am a student at the department of ...  <b>My scientific advisor is Prof...</b>          I work under the guidance of professor...</p>
(Q)	<p>I'll be happy to answer questions at the end.          If you have any questions, please feel free to interrupt.</p>
(S)	<p>I work in the <b>field of</b> ....          I am currently doing <b>my bachelor / masters degree in</b>..... studies          Let me now go into some detail regarding <b>the subject</b> I have mentioned.          I began with the study of <b>literature</b> on the subject including some basic works written by...          I have used many different sources of information, such as ...          The theory of ..... was constructed and developed by ....</p>
(G)	<p><b>The main purpose/goal/aim of my research</b> is to find out/ define/ characterize/ explore/ investigate/ analyze/ gain/.....          It is aimed at .....</p> <p>The focus of my research is on the relationship between .... and ... .          This work is devoted to an important <b>problem</b> into which too few scientists have researched until now.          It is very important and interesting to examine (analyze/ evaluate/ describe).....</p> <p>The most challenging problems I have faced with are ...          My study deals with the problems of.../is devoted to the investigation of...          I set myself <b>a task/ objective</b> to/of...          Its objectives are the following:</p>
(R)	<p>I consider my work to be <b>relevant</b> nowadays because ...          I think the results of the work will be of considerable <b>practical significance</b>, because ...</p>
(E)	<p><b>The methods and techniques</b> we apply in this research include experiments (observations, laboratory tests, field and pilot plant study.....)</p> <p>The <b>experimental part</b> of my research will mostly consist of tests to be conducted on...          I expect to obtain the following <b>results</b> .....</p>
C)	<p>In the future I'm going to continue my studies and take a Postgraduate course .....</p> <p><b>In conclusion</b> I would like to say that .....</p> <p>To sum up, I would like to say that .....</p> <p>That completes my presentation. Thank you.</p>



## Appendix 2 Feedback form

Presenter(s) \_\_\_\_\_

Title of the presentation \_\_\_\_\_

<b>Criteria</b>	<b>Rating</b>	<b>Comments</b>
Opening	5 4 3 2 1	
Structure, organization, transitions	5 4 3 2 1	
Examples, explanations	5 4 3 2 1	
Visual aids	5 4 3 2 1	
Summary/ Conclusion	5 4 3 2 1	
Interaction with the audience/ Eye contact	5 4 3 2 1	
Gestures	5 4 3 2 1	
Volume of voice	5 4 3 2 1	
Pace	5 4 3 2 1	
Q&A	5 4 3 2 1	
Enthusiasm	5 4 3 2 1	
Time	5 4 3 2 1	
Overall impression, Purpose, achievement	5 4 3 2 1	
Other aspects (specify)	5 4 3 2 1	
<p><b>Rating key:</b>  <b>1=poor; 2=fair; 3=acceptable; 4-good; 5=excellent</b></p>		

## Appendix 3

### Texts

#### НИЖЕГОРОДСКАЯ ПРАКТИКА ВОССОЗДАНИЯ АРХИТЕКТУРНЫХ ОБЪЕКТОВ

В современной теории реставрации отношение к воссозданию памятников архитектуры весьма неоднозначное. Теоретические исследования этой проблемы ведутся уже более столетия. При этом во всех странах мира отмечается всплеск воссоздания утраченных объектов архитектуры, имеющих особое историческое или сакральное значение в культуре страны. На сегодняшний день в России и Европе накопился значительный опыт возрождения историко-архитектурных памятников с применением реставрационного метода воссоздания. Обобщение и анализ этого опыта обусловили актуальность настоящего исследования.

В данной статье поставлена задача: не затрагивая европейский опыт, остановимся на некоторых примерах отечественной практики воссоздания. В этой связи необходимо напомнить о том, что ни в одной стране мира не было уничтожено столько памятников архитектуры, как в нашем Отечестве. В борьбе с религией преимущественно уничтожались культовые постройки. Так стоит ли их воссоздавать?

Некоторые исследователи по этому вопросу высказываются крайне негативно, называя воссозданные сооружения «копией», «новоделом», «макетом в натуральную величину» и т.д. Другие теоретики допускают воссоздание памятника архитектуры.

В этой связи возникает вопрос: а что же происходит в реальной практике реставрации в аспекте воссоздания? Проведенное нами исследование дает основание утверждать, что это явление становится все более популярным в современной России. На основе анализа установлено, что количество воссозданных объектов архитектуры на настоящий момент свыше 50.

Как уже отмечалось, большую часть утраченных памятников архитектуры составляют культовые здания. Именно они подверглись тотальному

уничтожению в борьбе с религией в советское время. Но именно они были теми градостроительными и смысловыми (сакральными) доминантами городской среды всех российских городов.

Подобная ситуация складывалась и в архитектурном пространстве старинного города Нижнего Новгорода. Многочисленные храмы, украшавшие древний город, в советский период были утрачены. Тем отраднее наблюдать формирующуюся в последние десятилетия тенденцию к их воссозданию.

Первым примером и попыткой возрождения утраченного объекта стало воссоздание Зачатской башни Нижегородского кремля, разрушенной оползнем в XVIII в. За основу был принят эскизный проект воссоздания башни, выполненный в 2005 г. ООО НИП «ЭТНОС» и согласованный Управлением Росохранкультуры.

В июне 2011 г. начались работы по воссозданию башни и прилегающих участков прясел с благоустройством территории. Были проведены археологические раскопки в районе воссоздаваемой Зачатской башни, в ходе которых выявлены целостные остатки фундаментов башни и контрфорсов. Вскрытые участки оказались разновременными – периода XVI–XIX вв. Часть из них в соответствии с проектом воссоздания сохранена внутри новой башни. Для части, оказавшейся за ее пределами (из-за оползневых процессов), идущей вдоль прясла между Белой и Зачатской башнями, с целью защиты от атмосферных осадков, выветривания и вандализма выполнено специальное сооружение из облегченных конструкций в виде стеклянного саркофага. Были обнаружены также фрагменты башни XVI в. которые вошли в единый музеефицированный архитектурно-археологический объект.

После проведенных работ с воссозданием Зачатской башни разрушенный контур Нижегородского кремля стал единым.

В последующие годы теория и практика воссоздания культовых объектов Нижегородского кремля продолжилась. В качестве учебной работы Нижегородского государственного архитектурно-строительного университета (ННГАСУ) по программе ВКР бакалавра в 2016г. был разработан проект воссоздания кафедрального Спасо-Преображенского

собора, который располагался в кремле и являлся главным сакральным объектом города.

В 2019 г. было принято решение о воссоздании на прежнем историческом месте кремля колокольни Спасо-Преображенского собора. Началу работ предшествовали археологические исследования участка.

Одновременно готовится проектная документация по воссозданию в кремле церкви Симеона Столпника, где на историческом месте сейчас проходят археологические исследования, которые являются обязательными при воссоздании столь ценного объекта. В планах Нижегородской митрополии воссоздание Успенской и Духовской церквей бывшего Духовского монастыря Нижегородского кремля.

На кафедре истории архитектуры и основ архитектурного проектирования ННГАСУ в ходе исследовательской работы по программе магистратуры были разработаны критерии обоснованности воссоздания архитектурных объектов и оценки полученного результата.

Однако нам представляется, что воссоздание как новое явление XXI столетия стало очень своевременным, поскольку демонстрирует реальный процесс духовного обновления современного общества. Возможно, после планомерного разрушения веры в советский период настало время «собирать камни», и любое напоминание о нашей истории ценно для архитектуры города и государства в целом.

(Adapted from <https://cloud.mail.ru/public/iwdi/FYgXUPtb4> )

## ОСОБЕННОСТИ СОЗДАНИЯ И ПРОЕКТИРОВАНИЯ ЭНЕРГОПАССИВНЫХ ДОМОВ

В настоящее время в нашей стране уделяется повышенное внимание вопросам энергосбережения и повышения энергоэффективности малоэтажного жилого фонда и многоквартирных жилых домов. В связи с этим широко изучается опыт стран Западной Европы по строительству энергетически пассивных зданий.

Под термином «энергетически пассивный» или «пассивный» дом (нем. Passivhaus, англ. passive house) принято понимать здание или сооружение, основной особенностью которого является крайне низкое энергопотребление системами отопления и вентиляции за счёт применения пассивных методов энергосбережения, как правило, возобновляемых источников энергии.

Стандарт энергопассивного дома был определен в 1988 году доктором Вольфгангом Файстом, основателем «Института пассивного дома» в Дармштадте (Германия) и профессором Бо Адамсоном из Лундского университета (Швеция). Первый в мире энергопассивный дом был построен в Германии в 1991 г. при поддержке федеральной земли Гессен в г. Дармштадт, р-н Кранихштайн; всего в мире построено и эксплуатируются около 15 000 сооружений, соответствующих этому стандарту. Все энергетически пассивные дома имеют порядковые номера и занесены в специальный реестр Европейского Союза.

Отметим основные принятые стандарты при проектировании пассивных домов:

- максимальное использование теплоты солнечной радиации, предусматривающее расположение большей части окон на южном фасаде;
- использование воздушного и напольного отопления;
- суммарная мощность отопительно-вентиляционных систем не должна превышать 10 Вт на 1 м<sup>2</sup> отапливаемой площади пола здания;
- удельный расход тепловой энергии на отопление не превышает 1 м<sup>2</sup> площади пола здания не должен превышать величины  $q_{от} = 15 \text{ кВт}\cdot\text{ч}/(\text{м}^2 \cdot \text{год})$ ;
- общее потребление первичной тепловой энергии для всех бытовых нужд (отопление, горячее водоснабжение и электроснабжение), приведенное к 1 м<sup>2</sup> площади пола здания, не должно превышать величины  $q_{об} = 120 \text{ кВт}\cdot\text{ч}/(\text{м}^2 \cdot \text{год})$ ;

- максимальное использование бытовых и биологических тепловыделений, по величине достигающих значений  $q_{\text{быт}} = 10\text{--}17 \text{ Вт/м}^2$ .

Основными преимуществами пассивных домов являются:

- использование автоматизированных механических приточно-вытяжных систем вентиляции и отопления позволяет организовывать более комфортный микроклимат в помещениях, исключая повышенную влажность внутреннего воздуха;

- снижение потребления энергетических ресурсов на нужды отопления здания более чем в десять раз, по сравнению со зданием, оборудованным классическими системами отопления и вентиляции;

- уменьшение эксплуатационных расходов по энергообеспечению здания, даже при растущих ценах на энергоносители;

- применение экологических технологий, способствующее защите окружающей среды, косвенное влияние на снижение вредных выбросов котельно-печного оборудования в атмосферу;

- строительство пассивных домов является первым шагом в конструировании домов с нулевым выбросом  $\text{CO}_2$ ;

- инженерные системы дома с нулевым выбросом  $\text{CO}_2$  полностью обеспечивают себя энергией из возобновляемых источников (ветроэлектростанции, фотоэлектрические модули, тепловые насосы и пр.).

Автором на основе изложенных и изученных сведений о строительстве пассивных домов, был запроектирован пассивный многоквартирный двухэтажный пассивный дом общей площадью по внутреннему обмеру  $160 \text{ м}^2$  ( $80 \text{ м}^2$  – площадь одного этажа). Принятое место строительства – климатический район Нижегородской области (с расчетной температурой наиболее холодной пятидневки обеспеченностью  $0,90 - t_{\text{н}} = -30 \text{ }^\circ\text{C}$ ).

В настоящей статье приведены результаты исследований по минимизации трансмиссионных потерь ограждающими конструкциями.

Анализ позволяет сделать вывод, что основным конструктивным фактором, влияющим на величину тепловых потерь, является расчетная величина сопротивления теплопередаче  $R_0$ , значение которой определяется теплозащитными свойствами конкретного ограждения.

Особенности наружных ограждающих конструкций пассивного дома и их состав: наружная стена 1 слой – глиняный кирпич, толщ. 510 мм; 2 слой – пенополиуретан, толщ. 800 мм; 3 слой – глиняный кирпич, толщ. 510 мм; 4 – цементно-песчаная штукатурка, толщ. 5 мм. Перекрытие 1 слой – черепичное покрытие, толщ. 50 мм; 2 слой – стропила деревянные (обрешетка); 3 слой – пенополиуретан, толщ. 1000 мм. Пол 1 слой – деревянное покрытие, толщ. 50 мм; 2 слой – цементно-песчаная стяжка, толщ. 30 мм; 3 слой – пенополиуретан, толщ. 1000 мм. Два стеклопакета с 3 стеклами, имеющие селективное покрытие, межстекольное заполнение – инертный газ аргон. Три входные двери с двумя тамбурами между ними.

По результатам расчетов получено, что трансмиссионные тепловые потери через наружные ограждающие конструкции по формуле составляют  $Q_{\text{но}} = 1700$  Вт, что соизмеримо, например, с мощностью бытового электрочайника или одного обогревателя.

Автором были проведены расчеты тепловых потерь жилого дома аналогичного объемно-планировочного решения, с ограждающими конструкциями, выполненными по действующим нормативным требованиям, предъявляемым к тепловой защите зданий в Российской Федерации. Тепловые трансмиссионные потери «традиционно» построенного дома составляют  $Q_{\text{но}} = 9\ 545$  Вт, что в 5,6 больше, чем у энергетически пассивного дома.

Отмечается практически полное отсутствие в тепловом балансе рассматриваемого объекта теплоты на нагрев инфильтрующегося воздуха, т. к. величина инфильтрации в пассивном доме практически сведена к нулю ввиду особенностей ограждающих конструкций.

Дальнейшим этапом исследований планируется проводить расчет воздушно-теплого баланса с учетом тепловых нагрузок на ГВС и вентиляцию, а также изучение инженерных способов использования возобновляемых источников энергии.

Перспективы строительства в России энергопассивных домов достаточно велики, т. к. относительно высокая капитальная стоимость строительства на практике оказывается гораздо ниже стоимости газификации жилого дома, а эксплуатационные расходы по оплате потребляемых энергоресурсов сведены к минимуму.

Отдельного исследования заслуживает положительный экологический эффект от внедрения энергопассивных домов, заключающийся в снижении выбросов парниковых газов в атмосферу, а также практически полного отказа от потребления невозобновляемых источников энергии.

(Adapted from <https://cloud.mail.ru/public/iwdi/FYgXUPtb4>)

## АНАЛИЗ СОВРЕМЕННЫХ ТЕНДЕНЦИЙ В ОБЛАСТИ ИНФОРМАЦИОННОЙ БЕЗОПАСНОСТИ

Тенденции в области информационной безопасности (ИБ) за последние два года обусловлены в первую очередь высокими темпами информатизации во всём мире и, в частности, в России. Актуальность данного исследования подтверждается разработкой нормативно-методических и руководящих документов со стороны федеральных органов законодательной и исполнительной власти. Так, постановление правительства РФ «О внесении изменений в государственную программу Российской Федерации "Информационное общество» нацелено на повышение уровня качества жизни населения и условий для ведения предпринимательской деятельности за счёт активного использования информационных технологий, и в том числе предупреждение угроз, возникающих в информационном обществе.

Применимость результатов данного исследования для прогнозирования и поиска возможных решений по предотвращению возникающих угроз информационной безопасности определяет его новизну. В работе были применены аналитические и статистические методы исследования. Целью данной работы является проведение анализа по выявлению основных тенденций в области информационной безопасности. В ходе данного исследования, будут рассмотрены наиболее распространённые виды угроз



информационной безопасности, факторы, влияющие на вероятность их возникновения, а также средства защиты.

Чаще всего эксперты опираются на определение информационной безопасности подразумевающим под собой такое состояние информационной системы, при котором она обеспечивает минимизацию рисков, связанных с нарушением конфиденциальности, целостности и доступности данных.

Для представления наиболее полной картины текущего состояния ИБ, связанного с выявленными уязвимостями приложений, были использованы и нормализованы данные от компании Varonis и исследовательско-консалтинговой компании Gartner.

Специалисты Varonis сформулировали несколько ключевых особенностей развития области разработки систем контроля на мировом рынке. Все тенденции тесно связаны с переходом компаний к смешанному режиму работы предприятий, где наряду с привычной офисной организацией деятельности, будет вестись удалённая работа. Рассмотрим некоторые из них:

1. Возникает необходимость контроля технических средств как закрепленных за сотрудником в стенах офиса, так и их личных, с которых они обеспечивают доступ к конфиденциальной информации компании.
2. Прогнозируется рост применения на предприятиях инструментов поведенческого анализа. Это направление тесно связано с первым, ведь остро определяется необходимость распознавания аутентифицирующейся личности в системе посредством обнаружения нетипичной и аномальной активности учетных записей в условиях удаленной работы.
3. Противодействие активности злоумышленников обуславливает потребность в новых технологических разработках, позволяющих автоматизировать работу ИБ-департаментов.
4. В связи с увеличением минимального набора знаний и умений сотрудников по информационной безопасности возникает необходимость изменения образовательных программ подготовки специалистов в области кибербезопасности.

В свою очередь, американская компания Gartner, специализирующаяся на исследованиях рынка информационных технологий, привела свой список основных тенденций в области ИБ. Особое место в этом перечне отведено уязвимостям, приводящим к утечке данных.

Уязвимость аутентификации. Ещё в ноябре 2016 года было рекомендовано использование биометрии как способа авторизации. Однако к 2019 году было проведено достаточно экспериментов, демонстрирующих ненадёжность такой защиты. В результате, по прошествии пяти лет был разработан и рекомендован к применению метод многофакторной аутентификации (MFA). Такой подход предполагает использование более одного устройства для многоступенчатого подтверждения своей личности.

Экспертами рекомендуется отказаться от способа многофакторной аутентификации с помощью нешифрующихся СМС-сообщений в пользу более надежных, основанных на коде Cronto, Push-уведомлениях или приложении Google Authenticator.

Атаки вирусов-вымогателей. Атаки вымогателей-шифровальщиков связаны с кражей данных компании с их последующей шифровкой, с целью сокрытия их от законных владельцев и угрозой их обнародования до момента, когда за информацию будет уплачен выкуп.

Для предотвращения такого рода атак рекомендуется внедрение киберобучения сотрудников, а также отказ от виртуальных частных сетей VPN в пользу сетевого доступа с нулевым доверием (Zero-Trust Network Access, ZTNA).

Внутренние (Инсайдерские) угрозы. Под инсайдерскими угрозами понимаются действия людей, имеющих доступ к закрытой информации, которые направлены против интересов компании.

С каждым годом объем и важность данных приобретают большую значимость, что в свою очередь увеличивает цену их утечки и любая компания должна оценивать и анализировать риски, связанные с кражей данных со стороны своих сотрудников. Стоит учитывать и то, что при

увеличении количества людей, имеющих доступ к конфиденциальной информации организации, риск значительно увеличивается.

Несмотря на то, что ведётся активная работа по улучшению правовых и технических методов по выявлению инсайдеров, угроза внутренних утечек будет существовать не один год. Однако, специалисты приводят ряд методов, способных минимизировать убытки: разграничение должностных обязанностей и привилегий доступа к данным; введение строгой политики управления учетными записями; проведение мониторинга и действий сотрудников; установление политики работы с периферийными, сменными и мобильными устройствами.

Подводя итоги, можно сказать, что за последний год технологии резким скачком поднялись на новый уровень, что повлекло за собой рост уязвимостей как в уже существующих, так и вновь применяемых системах, которые умело использовали киберпреступники. Анализ рассмотренных направлений информационной безопасности показывает их динамику развития в соответствии с мировыми тенденциями в ИТ-сфере в целом.

(Adapted from <https://www.nngasu.ru/science/SMU/0%9A%D0%A4%D0%9D-2021.pdf>)

