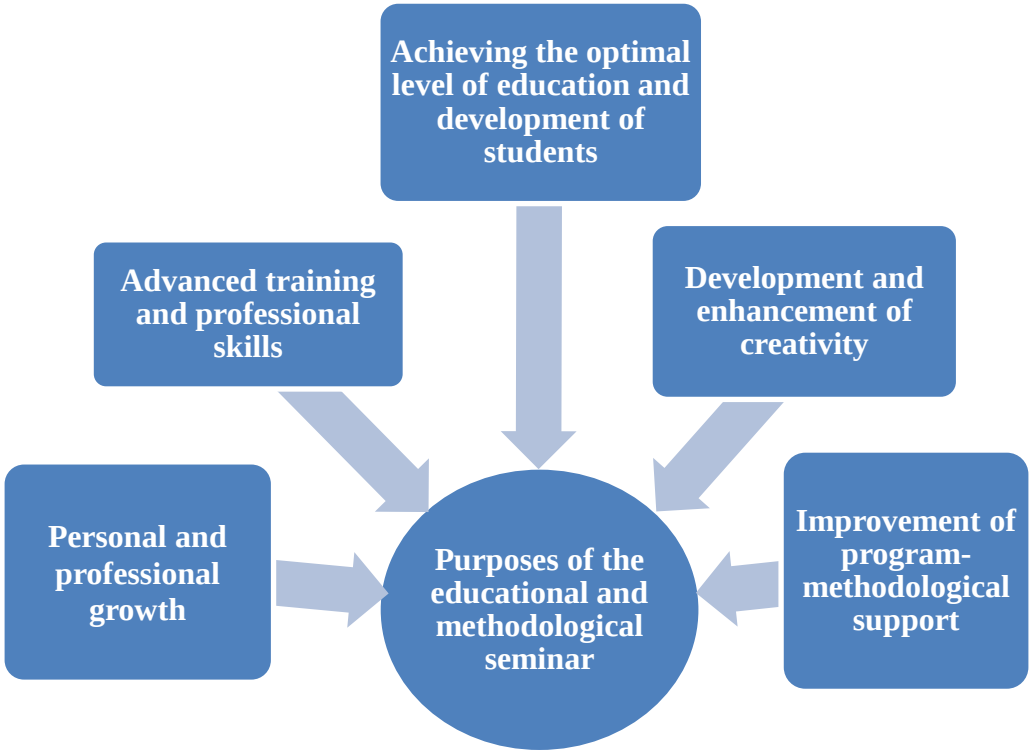
With the support of the Erasmus+ Programme of the European Union

Report on the educational and methodological seminar
"STEM-training and practical teaching methods"

Methodological activity is one of the determining factors in the development of the university, providing a high degree of preparedness of the teaching staff for innovative processes. The main purpose of the educational and methodological seminar was to increase the professional competence of teachers, as the main factor ensuring the effectiveness of the learning process and methodological support for the innovative development of an educational institution.



Purposes of the educational and methodological seminar:

• comprehensive improvement of the qualifications and professional skills of teachers and masters of industrial training;

• development and enhancement of the creative potential of the teaching staff as a whole;

• creation of conditions for personal and professional growth of teachers;

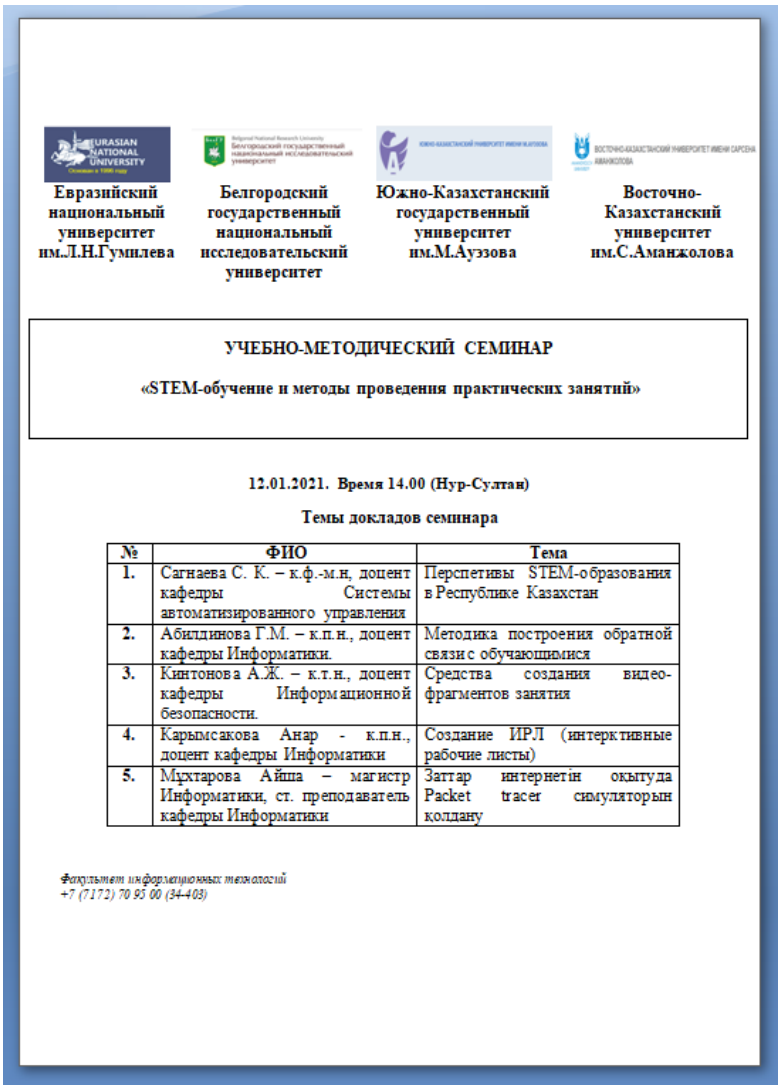
• improvement of program-methodological support to create conditions for the successful mastering of work programs of academic disciplines by students;

• achievement of the optimal level of education and development of students.

The methodological seminar was attended by teachers of the Department of "Informatics", "Information Security", "Automated Control Systems" of **L.N.Gumilev ENU, Belgorod State National Research University of the Russian Federation, M.Auezov South Kazakhstan State University, S. Amanzholov East Kazakhstan University.**

The most important means of improving the pedagogical skills of teachers, linking the whole system of work of the university into a single whole, is methodical work. The role of methodological work is significantly increasing in modern conditions in connection with the modernization of education.

The speakers familiarized the audience with the content and technique of using the STEM method, telecommunications and web projects, expressing confidence that the use of the methodology contributes to the improvement of self-educational competence of students, and this in turn leads to the formation of the personality of a future specialist of a new type, constantly raising the level in the process of continuous learning. 5 reports were heard at the seminar.



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УЧЕБНО-МЕТОДИЧЕСКИЙ СЕМИНАР

«STEM-обучение и методы проведения практических занятий»

12.01.2021. Время 14.00 (Нур-Султан)

Темы докладов семинара

№	ФИО	Тема
1.	Сагнаева С. К. – к.ф.-м.н, доцент кафедры Системы автоматизированного управления	Перспективы STEM-образования в Республике Казахстан
2.	Абилдинова Г.М. – к.п.н., доцент кафедры Информатики.	Методика построения обратной связи с обучающимися
3.	Кинтонова А.Ж. – к.т.н., доцент кафедры Информационной безопасности.	Средства создания видео-фрагментов занятия
4.	Карымсакова Анар - к.п.н., доцент кафедры Информатики	Создание ИРЛ (интерктивные рабочие листы)
5.	Мухтарова Айша – магистр Информатики, ст. преподаватель кафедры Информатики	Заттар интернетін окытуда Packet tracer симуляторын колдану

Факультет информационных технологий
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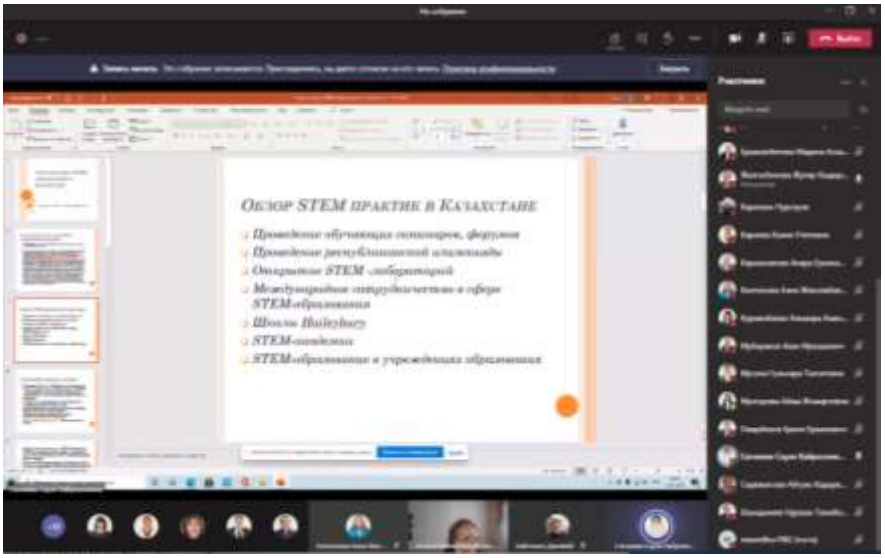
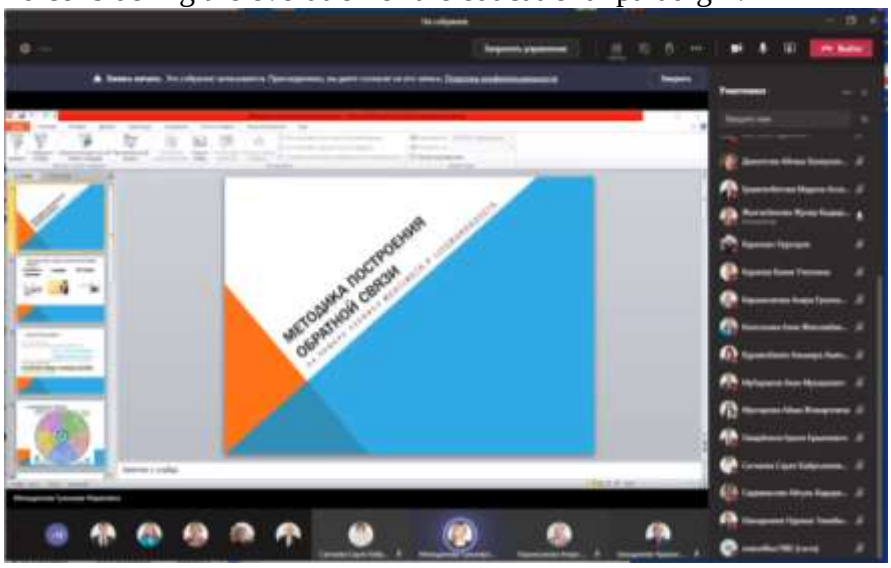
1. Sagnaeva S.K. - Candidate of Physical and Mathematical Sciences, Associate Professor of the Department of Systems Analysis and Managenment, Chairperson of the EMD of the Faculty of Information Technologies made a presentation on the topic "Prospects of STEM education in the Republic of Kazakhstan". The author began her presentation with an analysis of the Perspectives of STEM Education in the Republic of Kazakhstan in online education, highlighting the key role of Internet technologies and gadgets in the education of the future.



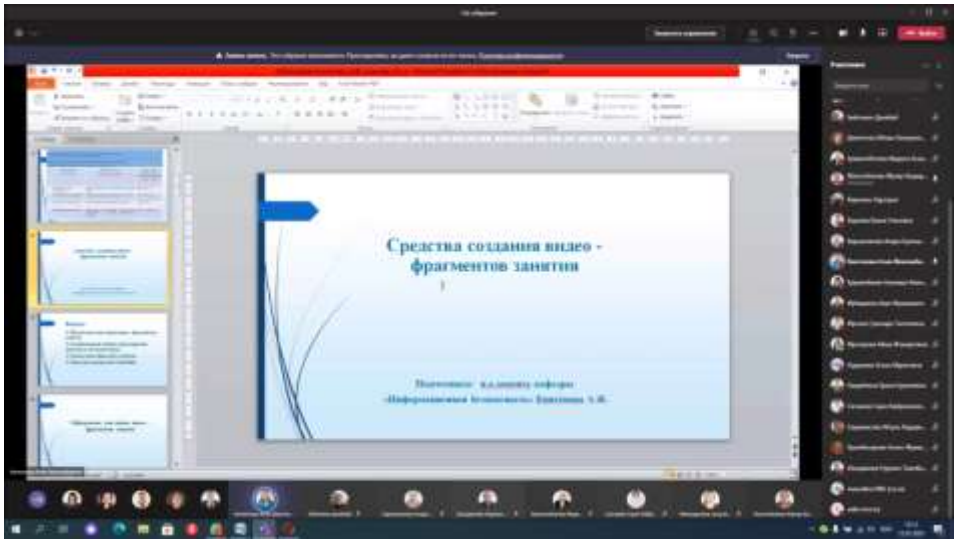
2. Abildinova GM - Candidate of Pedagogical Sciences, Associate Professor of the Department of Informatics, revealed the content of active teaching methods of the methodology for constructing feedback with students, including in conducting STEM training. The speaker began her presentation by defining learning and considering the evolution of the educational paradigm.



LIVEWORKSHEETS is a powerful and simple tool for creating interactive worksheet assignments electronically. There are many tools that a teacher needs to create interactive sheets. The grade is calculated immediately upon submission and the completed assignments with grades written on the sheet are accumulated by the teacher in the box "www.liveworksheets.com". Student registration is not required. He receives the task simply by reference. The task is compiled on the basis of a Word document or a scanned picture from any problem book, textbook. If you already have ready-made tasks in Word, then you will only have to place interactive controls (drop-down lists, multiple selection, yes / no checkboxes, connection with lines, etc.). An explanatory video (pre-loaded on youtube) can also be inserted into the sheet. There are even elements with listening here (you can make sure that after listening to how the word sounds, the student will write this word.

An English-language resource turns working materials into interactive tasks. Here can be find a variety of tutorial videos on how to use it, or explore pre-made materials and apply them in your work. What you can do: add text fields to enter text; compose polls and quizzes with the choice of the correct answer; match and drag responses; post assignments for audition; add mp3 files, YouTube videos and links.

3. Kintonova A.Zh. - Candidate of Technical Sciences, Associate Professor of the Department of Information Security. She prepared a report on the topic: Means of creating video fragments in classes.



The report reflected the following issues:

1. Programs for recording video - fragments of the lesson.
2. Comparative table of characteristics of programs for recording video.
3. Recording a video fragment of the lesson.
4. Description of the CamStudio program.

According to the results of studies and surveys of teachers:

• Video enlivens the lesson, makes educational material more accessible.

• Promotes an increase in the effectiveness of classes.

• Watching videos adds dynamics and interactivity to the lesson.

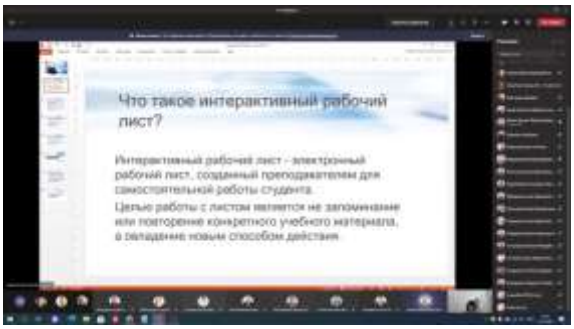
• Video makes it possible to better memorize and assimilate the material, as it simultaneously affects the visual and auditory channels.

• Video contributes to the development of the general knowledge base of students.

• Video workshop - a unique material that allows you to immediately apply the knowledge gained.

• Increases student motivation and enthusiasm.

4. Karymsakova A.E. - Candidate of Pedagogical Sciences, Associate Professor of the Department of Informatics, made a presentation on the topic: "Creating an IW (Interactive Worksheet)". The topic of the report reveals the concept, purpose, advantages and methods of creating an IW. And which ones are currently being used in distance learning. Interactive worksheet - an electronic worksheet created by the teacher for the student's independent work. The purpose of working with a sheet is not memorizing or repeating a specific educational material, but mastering a new way of acting.

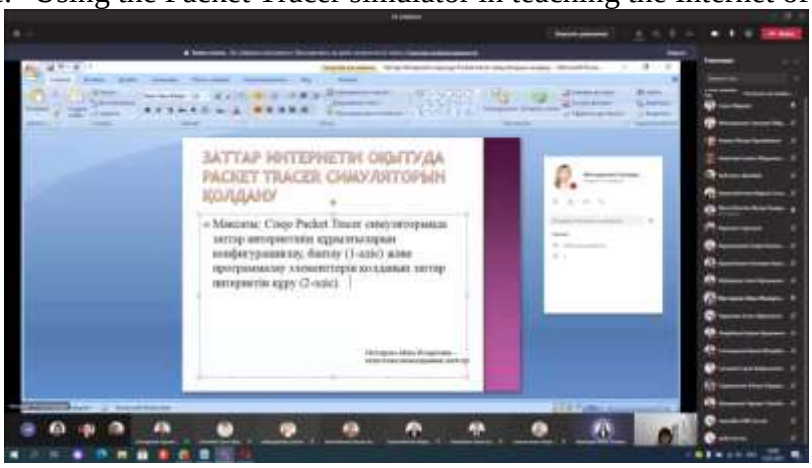


H5P.org is a convenient and simple website builder that allows you to choose any available template for creating interactive content. All H5P components are made in modern HTML5 format with the addition of JavaScript code and CSS styles. This allows the end user to easily study materials created using the service on any device.

Wizer.me is a convenient and interesting service that allows you to create interactive worksheets by adding different content (texts, images, videos, embeddable presentations, interactive posters, Google maps,

etc.) and using various types of tasks: from traditional tasks with a choice of answer and an open answer before tasks for commenting on the image and filling in the table

5. Mukhtarova Aisha - Master of Informatics, Senior Lecturer of the Department of Informatics. Posted a report on the topic: "Using the Packet Tracer simulator in teaching the Internet of Things."



Packet Tracer is a data network simulator manufactured by Cisco Systems. Allows you to make workable network models, configure (using Cisco IOS commands) routers and switches, interact between multiple users (via the cloud).

Packet Tracer is not only a great tool for training your terminal configuration skills, but also a useful tool for learning about TCP / IP protocols. To do this, the simulator uses the simulation mode, where you can “live” see how packets are sent over the network from device to device. In addition, with the help of animation, you can check the network for health.

Based on the Packet Tracer software product, it is possible to create network topologies from a wide variety of Cisco routers and switches, workstations and network connections such as Ethernet, Serial, ISDN, Frame Relay. The functions of the simulator can be suitable for both training and operation, setting up the network even at the planning stage.

Packet Tracer includes the following features:

• Workspace for creating a network of any size and complexity.
• Modeling in real-time.
• Modeling in simulation mode.
• Graphical interface for user interaction when configuring network devices.
• Image of network equipment with support for adding, removing, moving various components.

As a result of this seminar and in the process of discussion, all participants came to the conclusion that the importance of distance learning in higher education is constantly increasing. Educational institutions are introducing this form of education because it:

• meets the needs of modern students living in the digital world;
• stimulates pedagogical innovations;
• promotes the exchange of knowledge and cooperation at the intra-university and inter-university levels;
• expands the possibilities of distance learning and simplifies access to education for various categories of students.