

**MoPED: Modernization of Pedagogical Higher Education by  
Innovative Teaching Instruments**

**586098-EPP-1-2017-1-UA-EPPKA2-CBHE-JP**

**HANDBOOK**

**Title of the Course:** *Internet and applied information technologies in  
education*

Speciality «*013 Primary Education*», Specialization «*Management of e-  
learning in the Intercultural Space*»,

Higher education degree: *Master's level*

Developers:

Institution of higher education Borys Grinchenko Kyiv University  
Faculty of Information Technology and Management.

2019 p.

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Brief summary of the course: Within the course students get acquainted with the technologies of Web 2.0, Web 3.0, electronic educational resources, e-learning, modern educational services and tools of the Internet to organize the educational process: to work on the Internet, work with hardware and equipment maintenance, work with electronic documents, audio and video, data collection and visualization, research, organization of joint work, project management, work with mobile devices for learning, organization of various types of communication and cooperation, management of educational process, creation of didactic and educational resources, use of open educational platforms. Training is based on research, practice-oriented and competency-based approaches, involves the formation of digital and life competencies. The aim of the discipline is to provide a high level of mastery of future primary school teachers with Internet technologies, electronic educational resources, modern digital tools and Internet services for use in the educational process of primary school. The task is to form theoretical knowledge and practical skills of using modern digital tools and services of the Internet, quality monitoring, e-learning resources, e-learning and acquisition of general and professional competencies listed below.

Key words: Internet technologies, e-learning resources, e-learning, e-communities, wiki technologies, cloud technologies, whiteboards, mind maps, e-publications, infographics, blogs, virtual labs, open educational platforms.

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## **1. DESCRIPTION OF THE COURSE**

### **1.1. The volume of the course in ECTS credits and its distribution in hours by the forms of organization of educational process and types of classes:**

ECTS credits –7,0

Content modules – 6, 5 of them in the 1st semester, 2 of them in the 2nd semester.

Total number of hours: 210, including 8 lecture hours, 8 hours of practical classes, 12 hours of laboratory classes, 30 hours – summative assessment.

### **1.2. Characteristics of the discipline by form of study.**

Form of study - external study mode

### **1.3. Discipline status.**

Required

### **1.4. Prerequisites for studying the discipline.**

Missing

### **1.5. Year of preparation, semester.**

Year of preparation - 1, Semesters 1,2

### **1.6. Form of final control.**

Test.

### **1.7. Learning language.**

Ukrainian

### **1.8. Internet address of the permanent placement of educational content of the course.** <https://elearning.kubg.edu.ua/course/view.php?id=20051> (guest access with password *moped*)

### **1.9. Developer (s).**

**Nataliia Morze** – Professor of Department of Computer Science and Mathematics of the Faculty of Information Technology and Management of Borys Grinchenko Kyiv University, Doctor of Pedagogical Sciences, Professor.

**Liliia Varchenko-Trotsenko** – PhD in Pedagogy, Researcher in Digital competence development centre of IT in Education Laboratory.

### **1.10. Aims of the course.**

**The aim** is to ensure a high level of mastery by future primary school teachers of Web 2.0, Web 3.0, electronic educational resources, modern digital tools and Internet services for their use in the educational process of the primary school.

**The task** is to form theoretical knowledge and practical skills of modern digital tools and services of the Internet, quality monitoring, e-learning resources, e-learning and acquisition of general and professional competencies listed below.

### **1.11. Program competencies that are formed in the process of studying the discipline.**

Integral Competence (IC)	The ability to solve complex problems in the field of primary education and/or research and innovation, which involves a deep rethinking of existing and the creation of new holistic knowledge and/or professional practice
General Competences (GC)	<b>GC-2.</b> Ability to generate new ideas <b>GK-3.</b> Ability to work in a team <b>GK-4.</b> Ability to search and analyze information from various sources
Professional Competencies (PC)	<b>PC-3.</b> Ability to provide methodological support for educational activities in primary school <b>PC-4.</b> Ability to organize the educational process in primary school using modern, scientifically sound, traditional and innovative tools, methods, techniques, technologies <b>PC-5.</b> Ability to carry out monitoring activities in the management of primary school
Professional competencies in additional specialization (PCS)	<b>PCS-1.3.</b> Ability to solve problems in educational and professional activities with the help of computer technology

### 1.12. Learning outcomes of the discipline.

Program learning outcomes:

1. <b>PLO -4.</b> To monitor and systematically control the quality of the educational process and the objectivity of evaluating the results of educational training of students, the work of clubs and optional courses
2. <b>PLO 6.</b> To provide assistance to teachers in mastering modern educational and alternative pedagogical technologies and methods of primary education
3. <b>PLO 7.</b> To manage the technology to organize the educational process in primary school
4. <b>PLO-19.</b> To carry out organizational and methodological activities for the organization of e-learning, use modern digital tools and resources to support the educational process; to organize training of students and advanced training of teachers with the use of modern educational and IC technologies; monitor and evaluate the quality of e-learning.

### 1.13. Control of students' academic achievements.

Means of diagnosing learning outcomes (current and final assessment)	Assessment for each content module includes points for the results of student learning in practical and laboratory classes, as well as during individual work.
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<p>Final assessment</p>	<p>Final assessment in the form of a test is carried out according to the assessment of the obtained learning outcomes of students during the course and has the following weights:</p> <p>Module 1 - 15 points (1 ECTS credit)</p> <p>Module 2 - 20 points (1 ECTS credit)</p> <p>Module 3 - 15 points (1 ECTS credit)</p> <p>Module 4 - 20 points (1 ECTS credit)</p> <p>Module 5 - 15 points (1 ECTS credit)</p> <p>Module 6 - 15 points (1 ECTS credit)</p> <p>Total: 100 points</p>																								
<p>Communication and feedback</p>	<p>Marks and comments will be displayed in the MOODLE rating log.</p> <p>The “MOODLE” Forum resource for questions and answers allows participants to have asynchronous discussions.</p> <p>The messenger of the MOODLE system will allow to realize instant communication with students.</p> <p>The use of corporate mail of each teacher and student provides an additional opportunity for communication.</p>																								
<p><b>Mark on the scale of the Institution of Higher Education</b></p>	<table border="1"> <thead> <tr> <th><b>Score</b></th> <th><b>Rating Value</b></th> <th><b>Evaluation Value</b></th> </tr> </thead> <tbody> <tr> <td><b>90 – 100</b></td> <td><b>A</b></td> <td><b>excellent</b></td> </tr> <tr> <td><b>80 – 89</b></td> <td><b>B</b></td> <td><b>very good</b></td> </tr> <tr> <td><b>70 – 79</b></td> <td><b>C</b></td> <td><b>good</b></td> </tr> <tr> <td><b>60 – 69</b></td> <td><b>D</b></td> <td><b>satisfactory</b></td> </tr> <tr> <td><b>50 – 59</b></td> <td><b>E</b></td> <td><b>satisfactory</b></td> </tr> <tr> <td><b>26 – 49</b></td> <td><b>FX</b></td> <td><b>unsatisfactory</b></td> </tr> <tr> <td><b>0-25</b></td> <td><b>F</b></td> <td><b>unsatisfactorily</b></td> </tr> </tbody> </table> <p><b>with the possibility of re-assessment</b></p> <p><b>with compulsory repeated study of the course</b></p>	<b>Score</b>	<b>Rating Value</b>	<b>Evaluation Value</b>	<b>90 – 100</b>	<b>A</b>	<b>excellent</b>	<b>80 – 89</b>	<b>B</b>	<b>very good</b>	<b>70 – 79</b>	<b>C</b>	<b>good</b>	<b>60 – 69</b>	<b>D</b>	<b>satisfactory</b>	<b>50 – 59</b>	<b>E</b>	<b>satisfactory</b>	<b>26 – 49</b>	<b>FX</b>	<b>unsatisfactory</b>	<b>0-25</b>	<b>F</b>	<b>unsatisfactorily</b>
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## 2. CONTENT AND STRUCTURE OF THE COURSE

### 2.1. Module 1. Digital transformation of education

#### 2.1.1. Theme 1. Internet technologies, electronic educational resources

Comparison of Internet technologies, aspects of the Internet development and its use in the educational process. Electronic educational resources and their typology. Trends in changing tools used in education.

#### 2.1.2. Aims and expected learning outcomes.

**Aims:** to acquaint future primary school teachers with the features of the digital transformation of education, to form an idea of electronic educational resources and their use in e-learning.

#### **Learning Outcomes:**

1) formation of competencies:

GC-2. Ability to generate new ideas

GC -3. Ability to work in a team

GC -4. Ability to search, process and analyze information from various sources

PC-3. Ability to provide methodological support for educational activities in primary school

PC-4. Ability to organize the educational process in primary school using modern, scientifically sound, traditional and innovative tools, methods, techniques, technologies

2) program learning outcomes:

PLO 6. To provide assistance to pedagogical workers in mastering modern educational and alternative pedagogical technologies and methods of primary education

PLO 7. Have the technology to organize the educational process in primary school

2.1.3. Criteria and forms of evaluation of learning outcomes on the Theme.

The total maximum score for the Theme is 20 points, in particular:

Type of task	Maximum points	Evaluation criteria	Quantitative and/or qualitative characteristics
Practical class №1	10	Ability to analyze educational electronic resources to select Internet tools in accordance with the educational Aims .	The availability, completeness and quality of completed tasks for practical training are taken into account High level - the student is able to analyze educational electronic resources, to select Internet tools in accordance with the educational Aims Intermediate level - the student is able to analyze educational electronic resources, can partially select educational electronic resources Low level - the student has a general idea of electronic educational resources
Individual work №1	5	Ability to explore trends in the tools used for learning	The availability, completeness and quality of completed tasks for individual work are taken into account <i>High level</i> - the student is able to study the changing trends of the tools used for learning <i>Intermediate level</i> - the student is able to study the changing trends of tools used in everyday life

			<i>Low level</i> - the student has a general idea of the Theme
Individual work №2	5	Ability to classify EER on various features	The availability, completeness and quality of completed tasks for individual work are taken into account <i>High level</i> - the student clearly classifies EER on various grounds <i>Intermediate level</i> - the student partially classifies EER on various grounds <i>Low level</i> - the student has a general idea of the Theme

#### 2.1.4. Digital tools.

Moodle e-learning course (ELC), knowledge mapping services (MindMeister, Bubble.us, etc.), online documents

#### 2.1.5. Innovative learning technologies.

Group work with the use of knowledge maps, joint documents, selection of digital learning tools; performing personalized tasks.

#### 2.1.6. Lecture 1. Internet technologies, electronic educational resources

Aims : to acquaint students with the history of the Internet, the possibilities of using social Internet technologies, further prospects for the development of the Internet.

Plan:

1. A brief digression into the history of the Internet.
2. Use of social technologies Web 2.0
3. Web 3.0, 4.0 technologies. Further prospects for the development of the Internet
4. Electronic educational resources, their classification.
5. EER for primary school.

#### 2.1.7. Practical lesson 1. Electronic educational resources

Aims : to learn to analyze different educational resources, to select them according to the educational Aims .

Plan:

1. Analysis of educational electronic resources.
2. Selection of educational electronic resources in accordance with the educational Aims .
3. Creating an online document with the results of work.
4. Loading work in ELC in the MOODLE system.

#### 2.1.8. Tasks for individual students work.

Individual work №1. Research of trends in the educational tools during the last 3 years in the world (Top 100 Tools for Education).

Objective: to deepen knowledge on the use of various Internet tools in recent years.

Plan:

1. Methods of rating formation Top 100 Tools for Education.
2. Research of rating instruments for the last 3 years.
3. Justification of the positions of the most popular tools.
4. Creating an online document with the results of work.
5. Loading work in ELC in the MOODLE system.

Individual work №2. №2. Classification of electronic educational resources.

Aims: to deepen knowledge about the use of different EERs and their classification.

Plan:

1. Research of different classifications of EER.
2. Formation of EER classification on the basis of researches.
3. Creating an online document with the results of the work.
4. Loading work in ELC in the MOODLE system.

#### 2.1.9. Theme 2. Critical evaluation of Internet resources

*Handbook* «Internet and applied information technologies in education»

Use of Internet resources in teaching and research activities. Evaluating the accuracy of information and reliability of sites for educational Aims s.

2.1.10. Aims and expected outcomes

Aims: to learn to distinguish formal indicators on web pages and to apply critical thinking skills in working with the Internet. Learn the basic techniques and strategies for forming critical thinking of students in assessing Internet resources, planning activities for the organization of such training and the development of criterion-oriented scales to assess the level of formation of the above skills in students.

Expected outcomes:

1) formation of competencies:

GC-4. Ability to search, process and analyze information from various sources

GC-3. Ability to provide methodological support for educational activities in primary school

GC-4. Ability to organize the educational process in primary school using modern, scientifically sound, traditional and innovative tools, methods, techniques, technologies

2) program learning outcomes:

PLO 6. To provide assistance to pedagogical workers in mastering modern educational and alternative pedagogical technologies and methods of primary education

PLO 7. To own technologies of the organization of educational process in elementary school

2.1.11. Criteria and forms of evaluation of learning outcomes on the Theme.

The total maximum score for the Theme is 15 points, in particular:

Type of task	Maximum points	Evaluation criteria	Quantitative and/or qualitative characteristics
Practical class №2	10	Ability to distinguish formal indicators on web pages and apply critical thinking skills in working with the Internet	<p>The availability, completeness and quality of completed tasks for practical training are taken into account</p> <p><i>High level</i> - the student is able to analyze educational electronic resources, to carry out selection of the Internet tools according to the educational Aims</p> <p><i>Intermediate level</i> - the student is able to analyze educational electronic resources, can partially select educational electronic resources</p> <p><i>Low level</i> - the student has a general idea of the Theme of work</p>
Individual work №3	5	Skills of research of modern tendencies of development of the Internet and prospects of its use in primary school	<p>The presence, completeness and quality of the executed tasks to individual work is considered</p> <p><i>High level</i> - the student is well orientated in current trends in the development of the Internet and outlines its use in primary school</p>

			<p><i>Intermediate level</i> - the student is orientated in current trends in the development of the Internet</p> <p><i>Low level</i> - the student has a general idea of the theme</p>
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#### 2.1.12. Digital tools.

Electronic educational course (ELC) on the Moodle platform, joint documents, resource "Seminar" of the Moodle system.

#### 2.1.13. Innovative learning technologies.

Group work with the use of joint documents; performing personalized tasks; peer evaluation.

#### 2.1.14. Practical class 2. Critical evaluation of Internet resources

Aims: to learn to distinguish formal indicators on web pages and to apply critical thinking skills in working with the Internet. Learn the basic techniques and strategies for the formation of critical thinking of primary school students in assessing Internet resources, planning activities for the organization of such training and developing criterion-oriented scales to assess the level of formation of the above skills in students.

Plan:

1. Critical evaluation of Internet resources.
2. Formal indicators of secure sites and the application of critical thinking skills in working with the Internet
3. Development of criterion-oriented scales for assessing the level of formation of the above skills in students.
4. Creating an online group document for collaboration, display results
5. Upload work in ELC in the MOODLE system in the resource seminar.
6. Evaluation of the work of others by criteria.

#### 2.1.15. Tasks for individual work of students.

Individual work №3. Research of modern tendencies of development of the Internet.

Aims: to deepen knowledge of current trends in the development of the Internet

Plan:

1. Research of modern tendencies of development of the Internet.
2. Forming an essay based on research.
3. Creating an online document with the results of work.
4. Loading work in ELC in the MOODLE system.

### **2.2. Module 2. Cloud services. Tools for working with electronic documents, audio and video files, for data collection and visualization**

2.2.1. Theme 3. Cloud services. Tools for working with electronic documents, audio and video files

The concept of cloud services and their use in the educational process. Classification of cloud services.

#### 2.2.2. Aims and expected outcomes.

**Aims:** to form cloud services, to teach to use cloud services for the organization of educational process in elementary school.

**Expected outcomes:**

- 1) formation of competencies:
  - GC-2. Ability to generate new ideas
  - GC-3. Ability to work in a team
  - GC-4. Ability to search, process and analyze information from various sources
  - PC-3. Ability to provide methodological support for educational activities in primary school
  - PC-4. Ability to organize the educational process in primary school using modern, scientifically sound, traditional and innovative tools, methods, techniques, technologies
- 2) program learning outcomes:

PLO 1. Act socially responsibly, implement educational reforms

PLO 6. To provide assistance to pedagogical workers in mastering modern educational and alternative pedagogical technologies and methods of primary education

PLO 7. To own technologies of the organization of educational process in elementary school

2.2.3. Criteria and forms of evaluation of learning outcomes on the Theme.

The total maximum score for the Theme is -15 points, in particular:

Type of task	Maximum points	Evaluation criteria	Quantitative and / or qualitative characteristics
Laboratory class №1	10	Ability to distinguish formal indicators on web pages and apply critical thinking skills in working with the Internet	<p>The availability, completeness and quality of completed tasks for the Laboratory class are taken into account</p> <p><i>High level</i> - the student has completed all tasks for laboratory work, knows how to use cloud services according to the needs</p> <p><i>Intermediate level</i> - the student has completed part of the tasks for laboratory work, partially knows how to use cloud services according to needs</p> <p><i>Low level</i> - the student has a general idea of the Theme of work, completed some tasks</p>
Individual work №4	5	Knowledge of electronic publishing services	<p>The availability, completeness and quality of completed tasks for individual work are taken into account</p> <p><i>High level</i> - the student is well oriented in the services of creating electronic publications and can choose them according to needs</p> <p><i>Intermediate level</i> - the student is well oriented in the services of creating electronic publications, can not always choose them according to needs</p> <p><i>Low level</i> - the student has a general idea of the theme</p>

#### 2.2.4. Digital tools.

E-learning course (ELC) on the Moodle platform, training videos, Google Drive, Office 365.

#### 2.2.5. Innovative learning technologies, Calameo, Slides, etc.

Work on the technology of the inverted class, the use of rotation stations in the process of Face-To-Face stage of the inverted class.

2.2.6. Laboratory class 1. Cloud services. Comparison of the possibilities of using Google Drive and Office 365 in the educational process.

**Aims:** to improve the skills of using cloud services in the educational process

**Plan:**

1. Log in to your corporate Google Account and Office 365 account.
2. Basic principles of Google Drive, document sharing.
3. Documents, spreadsheets and presentations on Google Drive.
  - Create a personal document with brief instructions for working in Gmail
  - Creating a group table with information about Google services (group work, each student describes a specific service)
  - Export the presentation from your computer, convert it to Google presentation, set up access to it "view by link".
4. Working with the calendar, setting up access to create joint events.
5. Basic principles of working with Office 365.
6. Create a comparison table of Google Drive and Office 365 (group work).
7. Download all links to the ELC.

#### 2.2.7. Tasks for individual students work.

Individual work №4. Analysis of tools and services for creating electronic publications (Calameo, Slides, etc.).

**Aims:** to acquaint with services of creation of electronic publications

**Plan:**

1. Research of services of creation of electronic publications.
2. Formation of a table with a brief description of services and the main possibilities of their use in the educational process.
3. Creating an online document with the results of work.
4. Loading work in ELC in the MOODLE system.

#### 2.2.8. Theme 4. Tools for working with audio and video

Use of video and audio in the educational process. Typology of initial videos. Video creation resources. Critical evaluation of video materials. Using video to organize inverted learning, microlearning. Features of educational materials in primary school. Work with YouTube Video Manager. Connect applications to Google Drive to work with audio and video.

#### 2.1.9. Aims and expected outcomes.

**Aims:** to form the concept of educational videos and audio materials. Develop basic skills in working with video and audio services.

**Expected outcomes:**

- 1) formation of competencies:
  - GC-2. Ability to generate new ideas
  - GC-3. Ability to work in a team
  - GC-4. Ability to search, process and analyze information from various sources
  - FC-3. Ability to provide methodological support for educational activities in primary school
  - FC-4. Ability to organize the educational process in primary school using modern, scientifically sound, traditional and innovative tools, methods, techniques, technologies

PCS-1.3. Ability to solve problems in educational and professional activities with the help of computer technology

2) program learning outcomes:

PLO 1. Act socially responsibly, implement educational reforms

PLO 6. To provide assistance to pedagogical workers in mastering modern educational and alternative pedagogical technologies and methods of primary education

PLO 7. To own technologies of the organization of educational process in elementary school

PLO-19. Carry out organizational and methodological activities for the organization of e-learning, use modern digital tools and resources to support the educational process; to organize training of students and advanced training of teachers with the use of modern educational and IC technologies; monitor and evaluate the quality of e-learning

2.2.10. Criteria and forms of evaluation of learning outcomes on the Theme.

The total maximum score for the Theme is 15 points, in particular:

Type of task	Maximum points	Evaluation criteria	Quantitative and/or qualitative characteristics
Laboratory class №2	10	Ability to work with the YouTube video manager according to the set goals	<p>The availability, completeness and quality of completed tasks for the Laboratory class are taken into account</p> <p><i>High level</i> - the student has completed all tasks for laboratory work, knows how to work with a video manager on YouTube</p> <p><i>Intermediate level</i> - the student has completed some of the tasks for laboratory work, partially knows how to work with a video manager on YouTube</p> <p><i>Low level</i> - the student has a general idea of the Theme of work, completed some tasks</p>
Individual work №5	5	Knowledge of electronic publishing services	<p>The availability, completeness and quality of completed tasks for individual work are taken into account</p> <p><i>High level</i> - the student is well oriented in the services of creating electronic publications and can choose them according to needs</p> <p><i>Intermediate level</i> - the student is well oriented in the services of creating electronic publications,</p>



			<p>can not always choose them according to needs</p> <p><i>Low level</i> - the student has a general idea of the Theme</p>
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#### 2.2.11. Digital tools.

Electronic learning course (ELC) on the Moodle platform, video and audio services, knowledge maps

#### 2.2.12. Innovative learning technologies.

Peering interaction of students, in particular peering evaluation.

2.2.13. Laboratory class 2. Working with a video manager on YouTube. Connect applications to Google Drive to work with audio and video

**Aims:** To learn how to work with YouTube Video Manager in accordance with the set goals and connect applications on Google Drive to work with audio and video

Plan:

1. Features of YouTube.
2. Basic principles of working with YouTube Manager.
3. Execution of tasks (selection of videos on the Theme and their processing).
4. Connect applications to Google Drive to work with audio and video.
5. Add a video link to the ELC.

#### 2.2.14. Tasks for individual students work.

Individual work №5. Creating a knowledge map of online audio and video tools.

**Aims:** To get acquainted with audio and video tools that can be useful in the work of a teacher

Plan:

1. Analysis of available tools.
2. Selection of tools useful in the work of the teacher (based on their own criteria)

(Examples of applications: Audio Converter, Cloud Audio Recorder, Audio Cutter, WeVideo - Video Editor and Maker, Video Converter, Video Dictionary with Drive, School Video Recorder for Google Drive ).

3. Creating a knowledge map based on the list.
4. Loading work in ELC in the MOODLE system.

#### 2.2.15. Theme 5. Tools for data collection and visualization

Using online tools to create questionnaires and further analyze the results. Use of infographics in the educational process. Features of perception of visual data by people of different age categories. Static and dynamic infographics. Using infographics in presentations. Use of infographics in primary school. Services of creating infographics of different types.

#### 2.1.16. Aims and expected outcomes.

**Aims:** to form the concept of data visualization, infographics. Get acquainted with the services for collecting statistics, creating infographics.

**Expected outcomes:**

- 1) formation of competencies:
  - GC-2. Ability to generate new ideas
  - GC-3. Ability to work in a team
  - GC-4. Ability to search, process and analyze information from various sources
  - PCS-3. Ability to provide methodological support for educational activities in primary school

PCS-4. Ability to organize the educational process in primary school using modern, scientifically sound, traditional and innovative tools, methods, techniques, technologies

PCS-1.3. Ability to solve problems in educational and professional activities with the help of computer technology

2) program learning outcomes:

PLO 1. Act socially responsibly, implement educational reforms

PLO 6. To provide assistance to pedagogical workers in mastering modern educational and alternative pedagogical technologies and methods of primary education

PLO 7. To own technologies of the organization of educational process in elementary school

PLO-19. Carry out organizational and methodological activities for the organization of e-learning, use modern digital tools and resources to support the educational process; to organize training of students and advanced training of teachers with the use of modern educational and IC technologies; monitor and evaluate the quality of e-learning

2.2.17. Criteria and forms of evaluation of learning outcomes on the Theme.

The total maximum score for the Theme is 15 points, in particular:

Type of task	Maximum points	Evaluation criteria	Quantitative and / or qualitative characteristics
Laboratory class №3	10	Ability to create questionnaires and infographics based on survey results	<p>The availability, completeness and quality of completed tasks for the Laboratory class are taken into account</p> <p><i>High level</i> - the student has completed all tasks for laboratory work, knows how to create a questionnaire in accordance with the educational Aims , is able to work with the service of creating infographics</p> <p><i>Intermediate level</i> - the student has completed some of the tasks for laboratory work, partly knows how to create a questionnaire in accordance with the educational Aims , partly knows how to work with the service of creating infographics</p> <p><i>Low level</i> - the student has a general idea of the Theme of work, completed some tasks</p>
Individual work №6	5	Knowledge of electronic publishing services	<p>The availability, completeness and quality of completed tasks for individual work are taken into account</p> <p><i>High level</i> - the student is well oriented in the services of creating electronic publications</p>

			<p>and can choose them according to needs</p> <p><i>Intermediate level</i> - the student is well oriented in the services of creating electronic publications, can not always choose them according to needs</p> <p><i>Low level</i> - the student has a general idea of the Theme</p>
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#### 2.2.18. Digital tools.

E-learning course (ELC) on the Moodle platform, Google forms, infographic creation services (Canva, PiktoChart, etc.)

#### 2.2.19. Innovative learning technologies.

Peering interaction of students, in particular peering evaluation.

#### 2.2.20. Laboratory class3. Creation of questionnaires, development of infographics.

**Aims:** to learn to create questionnaires and infographics based on survey results

**Plan:**

1. The use of questionnaires in the educational process
2. Working with Google-form (creating a questionnaire on 10 questions of different types, according to identified needs).
3. Answers to questionnaires of classmates, analysis of survey results.
4. The concept of infographics, infographic services.
5. Creating infographics on the Theme of the questionnaire.
6. Loading the results of work in the ELC.
7. Checking each other's work according to certain criteria.

#### 2.2.21. Tasks for students individual work.

Individual work №6. Analysis of the peculiarities of the perception of visual information by people of different ages, nationalities, gender, etc.

**Aims:** to deepen knowledge about the peculiarities of the perception of visual information by people of different ages, nationalities, gender, etc.

**Plan:**

1. Research of peculiarities of perception of visual information by people of different age categories, nationalities, gender, etc.
2. Creating an online document with the results of work.
3. Download work in ELC in the MOODLE system.

### 2.3. Module 3. Tools for research and search, project management

#### 2.3.1. Theme 6. Tools for research and search, project management.

Research and retrieval tools. Search engines, semantic search. Special search. Repositories. Scientometric databases. Google Academy, Scopus, WoS. The concept of project management.

#### 2.3.2. Aims and expected outcomes.

**Aims:** to acquaint students with the basic principles of working with search engines, semantic search. Use of scientometric databases to search for information for the preparation of educational materials. Learn to use repositories.

**Expected outcomes:**

- 1) formation of competies:
  - GC-2. Ability to generate new ideas
  - GC-3. Ability to work in a team

GC-4. Ability to search, process and analyze information from various sources

PC-3. Ability to provide methodological support for educational activities in primary school

PC-4. Ability to organize the educational process in primary school using modern, scientifically sound, traditional and innovative tools, methods, techniques, technologies

2) program learning outcomes:

PLO 1. Act socially responsibly, implement educational reforms

PLO 6. To provide assistance to pedagogical workers in mastering modern educational and alternative pedagogical technologies and methods of primary education

PLO 7. To own technologies of the organization of educational process in elementary school

PLO-19. Carry out organizational and methodological activities for the organization of e-learning, use modern digital tools and resources to support the educational process; to organize training of students and advanced training of teachers with the use of modern educational and IC technologies; monitor and evaluate the quality of e-learning

2.3.3. Criteria and forms of evaluation of learning outcomes on the Theme.

The total maximum score for the Theme is 20 points, in particular:

Type of task	Maximum points	Evaluation criteria	Quantitative and / or qualitative characteristics
Laboratory class №4	10	Ability to use search engines, scientometric databases, repositories for the set goals	<p>The availability, completeness and quality of completed tasks for the laboratory lesson are taken into account</p> <p><i>High level</i> - the student has completed all tasks for laboratory work, knows how to use search engines, scientometric databases, repositories for the Aims</p> <p><i>Intermediate level</i> - the student has completed part of the tasks for laboratory work, partially knows how to use search engines, scientometric databases, repositories for the Aims</p> <p><i>Low level</i> - the student has a general idea of the Theme of work, completed some tasks</p>
Individual work №7	5	Knowledge of semantic search engines and the possibilities of their use in the educational process	<p>The availability, completeness and quality of completed tasks for individual work are taken into account</p> <p><i>High level</i> - the student is well oriented in semantic search engines and the possibilities of</p>

			<p>their use in the educational process</p> <p>Intermediate level - the student is partially oriented in semantic search engines</p> <p><i>Low level</i> - the student has a general idea of the Theme</p>
Individual work №8	5	Knowledge of tools for project management	<p>The availability, completeness and quality of completed tasks for individual work are taken into account</p> <p><i>High level</i> - the student is well oriented in tools for project management</p> <p><i>Intermediate level</i> - the student is partly a tool for project management</p> <p><i>Low level</i> - the student has a general idea of the Theme</p>

#### 2.3.4. Digital tools.

Moodle e-learning course (ELC), research and search tools. Search engines, semantic search. Special search. Repositories. Scientometric databases. Google Academy, Scopus, WoS.

#### 2.3.5. Innovative learning technologies.

Work in groups, inverted learning technologies

#### 2.3.6. Lecture 2. Tools for research

Aims: to acquaint students with the basic tools for research

Plan:

1. The concept of research. Search engines, search results.
2. Comometric databases, search for materials for lessons and publications.
3. Electronic repositories

2.3.6. Laboratory class 4. Use of search engines, scientometric databases, repositories

Aims: to improve the skills of using search engines, scientometric databases, repositories for the Aimss

Plan:

1. Basic principles of working with search engines. Carrying out a search according to the set goal. Advanced search.
2. Basic principles of working with scientometric databases. Searching for the goal.
3. Basic principles of working with repositories. Carrying out a search according to the set goal. Advanced search.
4. Saving the results of work in an online document.
5. Loading work in ELC in the MOODLE system.

#### 2.3.7. Tasks for individual work of students.

Individual work №7. Analysis of semantic search engines and possibilities of their use in the educational process.

**Aims:** to get acquainted with the features of semantic search engines and the possibilities of their use in the educational process

**Plan:**

1. Analysis of semantic search engines and the possibilities of their use in the educational process

2. Creating a comparative table of semantic search engines.

3. Download work in ELC in the MOODLE system.

Individual work №8. Project management tools.

**Aims:** to get acquainted with the tools for project management

**Plan:**

1. Tools for project management.

2. Creating a presentation 3 tools for project management

3. Download work in ELC in the MOODLE system.

**2.4. Module 4. Tools for managing the learning process**

2.4.1. Theme 7. Tools for managing the learning process

Tools for managing the learning process. The concept of CMS, LMS.

2.4.2. Aims and expected outcomes.

**Aims:** to form an idea of CMS, LMS.

**Expected outcomes:**

1) formation of compeies:

GC-2. Ability to generate new ideas

GC-3. Ability to work in a team

GC-4. Ability to search, process and analyze information from various sources

PC-3. Ability to provide methodological support for educational activities in primary

school

PC-4. Ability to organize the educational process in primary school using modern,

scientifically sound, traditional and innovative tools, methods, techniques, technologies

PC-5. Ability to carry out monitoring activities in the management of primary school

PCS-1.3. Ability to solve problems in educational and professional activities with the

help of computer technology

2) program learning outcomes:

PLO 1. Act socially responsibly, implement educational reforms

PLO-4. To monitor and systematically control the quality of the educational process

and the objectivity of evaluating the results of educational training of students, the work of clubs and electives

PLO 6. To provide assistance to pedagogical workers in mastering modern

educational and alternative pedagogical technologies and methods of primary education

PLO 7. To own technologies of the organization of educational process in elementary

school

PLO-19. Carry out organizational and methodological activities for the organization

of e-learning, use modern digital tools and resources to support the educational process; to

organize training of students and advanced training of teachers with the use of modern

educational and IC technologies; monitor and evaluate the quality of e-learning

2.4.3. Criteria and forms of evaluation of learning outcomes on the Theme.

The total maximum score for the Theme is 15 points, in particular:

Type of task	Maximum points	Evaluation criteria	Quantitative and / or qualitative characteristics

Practical class №3	10	Ability to select tools for managing the learning process according to needs	<p>The availability, completeness and quality of tasks for practical lessons are taken into account</p> <p><i>High level</i> - the student is able to select tools for managing the learning process according to needs</p> <p><i>Intermediate level</i> - the student knows some tools for the implementation of educational management</p> <p><i>Low level</i> - the student has a general idea of the Theme</p>
Individual work №9	5	Knowledge of commercial and free software for educational process management	<p>The availability, completeness and quality of completed tasks for individual work are taken into account</p> <p><i>High level</i> - the student is well oriented in commercial and free software for educational process management</p> <p><i>Intermediate level</i> - the student is partially oriented in commercial and free software for educational process management</p> <p><i>Low level</i> - the student has a general idea of the Theme</p>

#### 2.4.4. Digital tools.

Electronic learning course (E-course) on the platform Moodle, Google-documents, CMS, LMS

#### 2.4.5. Innovative learning technologies.

Work in pairs, peer-to-peer interaction.

#### 2.4.6. Lecture 3. Tools for managing the learning process.

Aims: to acquaint with the concept of CMS LMS and LCMS

Plan:

1. CMS LMS and LCMS for training and their differELCes.
2. Features of the use of LMS in primary school.

2.4.7. Practical work 3. Tools for the implementation of educational process management.

Aims: to deepen knowledge on the use of CMS LMS and LCMS in the educational process

Plan:

1. Tools for managing the learning process.
2. Creating a presentation in pairs

3. Download work in ELC in the MOODLE system.
  4. Checking each other's work according to certain criteria.
- 2.4.8. Tasks for individual work of students.

Individual work №9. Comparison of commercial and free software for educational process management

Aims: to learn more about commercial and free software for educational process management

Plan:

1. Comparison of commercial and free software for educational process management
2. Saving the results of work in an online document.
3. Download work in ELC in the MOODLE system.

2.5. Module 5. Tools for organizing various types of communication and cooperation

2.5.1. Theme 8. Tools for organizing different types of communication and cooperation

The concept of e-communication and e-cooperation. Classification of communication. Signs of cooperation. Communication and cooperation services. VKI technology.

2.5.2. Aims and expected outcomes.

Aims: to acquaint students with the peculiarities of the organization of e-communication and e-cooperation. Features of the use of cooperation and communication services in primary school.

Expected outcomes:

1) formation of competies:

GC-2. Ability to generate new ideas

GC-3. Ability to work in a team

GC-4. Ability to search, process and analyze information from various sources

PC-3. Ability to provide methodological support for educational activities in primary school

PC-4. Ability to organize the educational process in primary school using modern, scientifically sound, traditional and innovative tools, methods, techniques, technologies

2) program learning outcomes:

PLO 1. Act socially responsibly, implement educational reforms

PLO 6. To provide assistance to pedagogical workers in mastering modern educational and alternative pedagogical technologies and methods of primary education

PLO 7. To own technologies of the organization of educational process in elementary school

PLO-19. Carry out organizational and methodological activities for the organization of e-learning, use modern digital tools and resources to support the educational process; to organize training of students and advanced training of teachers with the use of modern educational and IC technologies; monitor and evaluate the quality of e-learning

2.5.3. Criteria and forms of evaluation of learning outcomes on the Theme.

The total maximum score for the Theme is 25 points, in particular:

Type of task	Maximum points	Evaluation criteria	Quantitative and / or qualitative characteristics
Laboratory class №5-6	20	Ability to choose tools for the organization of electronic communication	The availability, completeness and quality of completed tasks for the Laboratory class are taken into account



			<p><i>High level</i> - the student has completed all tasks for laboratory work, is able to select tools for the organization of electronic communication and cooperation</p> <p><i>Intermediate level</i> - the student has completed some of the tasks for laboratory work, partially able to select tools for the organization of electronic communication and cooperation</p> <p><i>Low level</i> - the student has a general idea of the Theme of work, completed some tasks</p>
Individual work №10	5	Skills of research of perspective services for cooperation	<p>The availability, completeness and quality of completed tasks for independent work are taken into account</p> <p><i>High level</i> - the student is well oriented in promising services for cooperation</p> <p><i>Intermediate level</i> - the student is partially oriented in promising services for cooperation</p> <p><i>Low level</i> - the student has a general idea of the Theme</p>

#### 2.5.4. Digital tools.

E-learning course (ELC) on the Moodle platform, common documents, messengers, wiki technology, common boards, knowledge maps.

#### 2.5.5. Innovative learning technologies.

Project work.

2.5.6 Lecture 3. Tools for organizing various types of communication and cooperation.

Aims: to deepen knowledge of the organization of cooperation and communication

Plan:

1. The concept of communication, interaction and cooperation.
2. The concept of e-communication and e-cooperation.
3. Classification of communication.
4. Signs of cooperation.
5. Services of organization of communication and cooperation.
6. Features of cooperation in primary school.
7. Wiki technology.

2.5.7. Laboratory work 5-6. Types and tools for electronic communication and cooperation.

Aims: to learn to use the tools of cooperation and communication to achieve educational goals

Plan:

1. Project work in groups

Justification of the project - formulation of the Aims and tasks of the project, substantiation of its social significance, definition of the theme of the project; organization of working groups, distribution of tasks between project participants

Search stage - research of a problem and gathering of the information (definition of a circle of sources and search of necessary information; the analysis of possible variants of the decision of a problem); selection of the optimal variant of the project task (idea generation); development of a plan of work on the project task; selection of materials and tools; choice of form of presentation of project results

Technological stage - implementation of the activities of each project participant in accordance with the plan of work on the project task (project implementation); preparation of presentation of project results

The final stage - a presentation (defense of the project) assessment of the results of the project, collective and personal achievements of project participants

2. Loading work in ELC in the MOODLE system.

2.5.8. Tasks for individual students work.

Individual work №10. Research of perspective services for cooperation for the next year (Top 100 Tools for Education).

Objective: to explore promising services for cooperation next year

Plan:

1. Participation in the survey Top 100 Digital Tools for Personal & Professional Learning, Top 100 Digital Tools for Workplace Learning, Top 100 Digital Tools for Education to choose from.

2. Creating an online document to justify their own answers.

3. Download work in ELC in the MOODLE system.

## 2.6. Module 6. Tools for working with mobile learning devices

2.6.1. Theme 9. Tools for working with mobile devices for learning

Tools for working with mobile devices for learning. Training programs, educational games, applications for creating educational content.

2.6.2. **Aims and expected outcomes.**

**Aims:** to acquaint students with the peculiarities of the organization of the educational process on the use of mobile devices.

**Expected outcomes:**

1) formation of competies:

GC-2. Ability to generate new ideas

GC-3. Ability to work in a team

GC-4. Ability to search, process and analyze information from various sources

PC-3. Ability to provide methodological support for educational activities in primary school

PC-4. Ability to organize the educational process in primary school using modern, scientifically sound, traditional and innovative tools, methods, techniques, technologies

2) program learning outcomes:

PLO 1. Act socially responsibly, implement educational reforms

PLO 6. To provide assistance to pedagogical workers in mastering modern educational and alternative pedagogical technologies and methods of primary education

PLO 7. To own technologies of the organization of educational process in elementary school

PLO-19. Carry out organizational and methodological activities for the organization of e-learning, use modern digital tools and resources to support the educational process; to organize training of students and advanced training of teachers with the use of modern educational and IC technologies; monitor and evaluate the quality of e-learning

2.6.3. Criteria and forms of evaluation of learning outcomes on the Theme.

Overall maximum score per Theme - or 15 points, including:

Type of task	Maximum points	Evaluation criteria
Practical Class №4	10	The availability, completeness and quality of completed tasks for practical training are taken into account
Individual work №11	5	The availability, completeness and quality of completed tasks of individual work are taken into account

Type of task	Maximum points	Evaluation criteria	Quantitative and / or qualitative characteristics
Practical class №4	10	Ability to select mobile applications according to the set goals	<p>The availability, completeness and quality of completed tasks for the practical lesson are taken into account</p> <p><i>High level</i> - the student is able to select mobile applications according to the set goals</p> <p><i>Intermediate level</i> - the student knows some mobile applications</p> <p><i>Low level</i> - the student has a general idea of the topic</p>
Individual work №11	5	Skills of analysis of popularity and efficiency of mobile applications for learning	<p>The availability, completeness and quality of completed tasks for individual work are taken into account</p> <p><i>High level</i> - the student is well oriented in effective mobile learning applications</p> <p><i>Intermediate level</i> - The student is partially focused on effective mobile learning applications</p> <p><i>Low level</i> - the student has a general idea of the Theme</p>

2.6.4. Digital tools.

E-learning course (E-course) on the Moodle platform, mobile learning applications.

2.6.5. Innovative learning technologies.

Group work, peer-to-peer interaction.

**2.6.7. Practical lesson 4. Mobile applications for education.**

**Aims:** to learn to select mobile applications according to the set goals

**Plan:**

1. Mobile applications for learning and features of their use in lessons.
2. Creating an online document with an example of using a mobile application in the classroom in accordance with the educational goals, justification for the choice of application.
3. Download work in ELC in the MOODLE system.

2.6.8. Tasks for individual students work.

Individual work №11. Analysis of the popularity and effectiveness of mobile applications for learning.

**Aims:** to get acquainted with popular and effective mobile applications for learning.

**Plan:**

1. Analysis of the popularity and effectiveness of mobile applications for learning.
2. Creating an online document justifying your own rating.
3. Download work in ELC in the MOODLE system.

**3. Tasks for final assessment**

3.1. List of questions for final control.

Tools for working on the Internet that can be used in the educational process

Tools for working with hardware and equipment maintenance

Current trends in hardware change in the world's leading countries

Comparison of the possibilities of using Google Drive and Office in the educational process 365

Electronic publishing services

Work with YouTube Video Manager.

Connect applications to Google Drive to work with audio and video

Online tools for working with audio and video

Data visualization and infographics

Selection of charts to display different types of data

Static and dynamic infographics

Using infographics in presentations

Features of visual information by people of different ages, nationalities, gender, etc.

Use of search engines, scientometric databases, repositories

Project management tools

Types of electronic communication. Content of electronic cooperation

The concept of LMS, CMS

Comparison of commercial and free software for educational process management

3.2. The procedure for final certification.

The final assessment in the form of a test is based on the results of the current work of students during the course and has the following weights:

Module 1 - 22.5% (35 points)

Module 2 - 29% (45 points)

Module 3 - 12.9% (20 points)

Module 4 - 9.7% (15 points)

Module 5 - 16.1% (25 points)

Module 6 - 9.7% (15 points)

In total - 155 points

The coefficient is 2.58

Total: 60 points

Exam - 40 points

**4. List of recommended literature (including electronic resources).**

**1. The main:**

Information and communication technology in education : monograph / ed. Badarcha Dendeva – M. : IITO UNESCO, 2013. — 320 p.

V. M. Kukhareenko et al., Theory and practice of blended learning: monograph. Kharkiv, Ukraine: JMisdruk", NTU "KHPI", 2016. – 284p.

**2.Extra:**

Ivanuk I. V. Educational policy: teach. guidances / I. V. Ivanuk. – K. : Taxon, 2006. – 226 p.

**Others:**

Digital Natives, Digital Immigrants By Marc Prensky, available at <http://www.nnstoy.org/download/technology/Digital%20Natives%20-%20Digital%20Immigrants.pdf>.

Dillenbourg, P., Baker, M., Blaye, A. & O'Malley, C. (1996) The evolution of research on collaborative learning. In E. Spada & P. Reiman (Eds) Learning in Humans and Machine: Towards an interdisciplinary learning science. (Pp. 189-211). Oxford: Elsevier.

How Net Generation Students Work, available at <http://people.howstuffworks.com/how-net-generation-students-work1.htm>.

ICT in Primary Education. – [Electronic resource]. - Access mode: <http://iite.unesco.org/pics/publications/en/files/3214691.pdf>

Intel® "Transformation of ICT policy in education". Manual. - Access mode: [http://edutransform.org/wp-content/uploads/2015/04/Intel\\_EduPolicy\\_Guide\\_Ukraine.pdf](http://edutransform.org/wp-content/uploads/2015/04/Intel_EduPolicy_Guide_Ukraine.pdf)

Johnson, D. W., & Johnson, R. T. (1998). Cooperative learning returns to college: What evidence is the ret hat it works? *Change*, 30(4), 26-36.

Johnson, L., Adams Becker, S., Estrada, V., and Freeman, A. (2015). NMC Horizon Report: 2015 Higher Education Edition [Electronic resource] // New Media Consortium. – 56 p. – Way of access: <http://cdn.nmc.org/media/2015-nmc-horizon-report-HE-EN.pdf>.

Johnson, L., Adams Becker, S., Estrada, V., Freeman, A. (2014). NMC Horizon Report: 2014 Higher Education Edition [Electronic resource] // New Media Consortium. – 52 p. – Way of access: <http://cdn.nmc.org/media/2014-nmc-horizon-report-he-EN-SC.pdf>.

Kagan S. Cooperative Learning. – Resources for Teachers, Inc. – 1999.

McGuffin L. & Olson G.M. (1992) "Shr Edit: a Shared Electronic Workspace"  
CSMIL Technical Report # 45 The University of Michigan.

McManus, M.M., & Aiken, R.M. (1993). The group leader paradigm in an intelligent collaborative learning system. In S. Ohlsson, P. Brna, and H. Pain (Eds.), Proceedings of the World Conference on Artificial Intelligence in Education. Charlottesville, VA: Association for the Advancement of Computing in Education, 249-256.

Michael Jones and Lois Burgess Encouraging SME e Collaboration – The Role of the Champion Facilitator // Interdisciplinary Journal of E-Learning & Learning Objects, Volume 6, 2010, 137-151, ,  
URL: <http://www.ijello.org/Volume6/IJELLOv6p137-151Jones689.pdf> (accessed on: 01.12.2013).

Riel Miller, Hanne Shapiro and Knud Erik Hilding-Hamann School's Over: Learning Spaces in Europe in 2020: An Imagining Exercise on the Future of Learning // Office for Official Publications of the European Communities. – 2008. – 94 p. – Way of access: <http://ftp.jrc.es/EURdoc/JRC47412.pdf>.

Smith, B. L., and Mac Gregor, J. T. (1992). "What is collaborative learning?" In Goodsell, A. S., Maher, M. R., and Tinto, V. (Eds.), Collaborative Learning: A Source book for Higher Education. National Center on Postsecondary Teaching, Learning, & Assessment, Syracuse University.

Tapscott, Don, 2009: Grownup digital: how the net generation is changing your world. Mc Graw Hill, New York, 2009, 368p. ISBN: 978-0-07-150863-6

Thomas, J.W. & Funaro, G.M. (1990), A multimedia computer-based model for learner-directed, collaborative problem-solving. In. Woolf, B. et. al., eds., Working Notes of 1990 Spring Symposium series on Knowledge-Based Environments for Learning and Teaching, 68-71, Stanford University.

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