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DIGITAL EDUCATIONAL ENVIRONMENT IN INSTITUTIONS OF HIGHER EDUCATION

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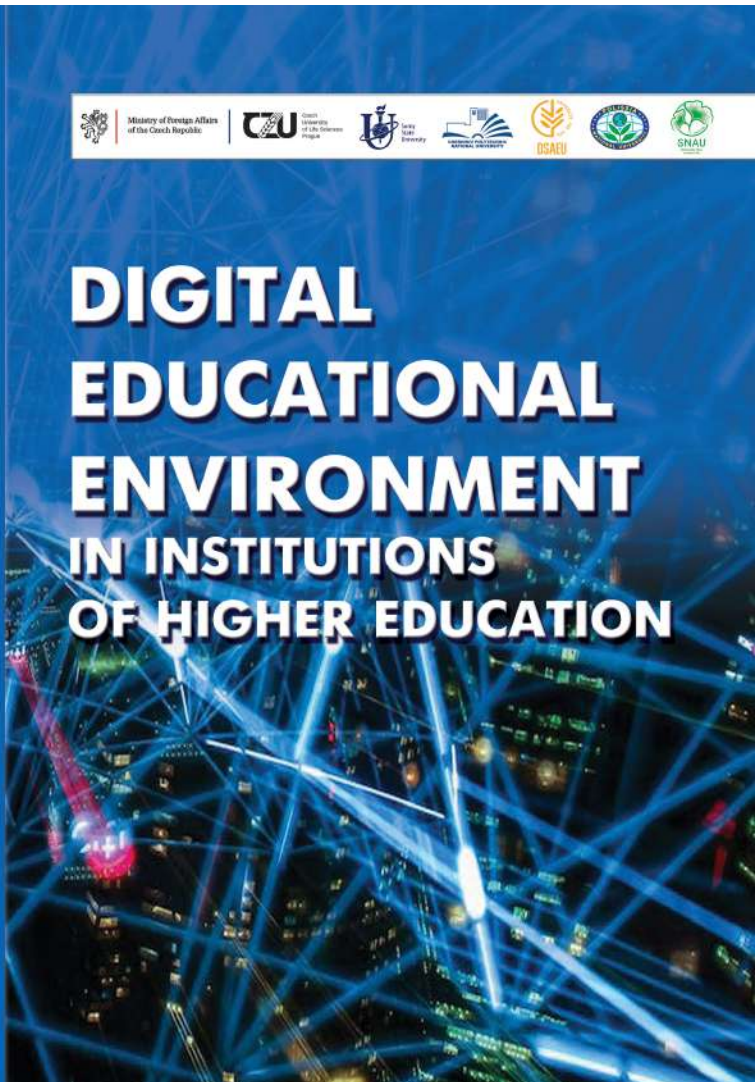
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Monograph

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The monograph presents modern educational technologies that can be used in the educational process of a higher educational institution. The monograph is aimed mainly at students of various study specialties, teachers. The monograph collects the opinions of scientists and teachers regarding the possible use of information technologies in the learning process, considers the main services and tools for evaluating written works, conducting an oral survey, and organizing online testing.

CONTENTS

potrebamy. [A test system for evaluating students' knowledge as one of the methods of modern educational technology Actual problems of education and upbringing of people with special needs.]. Zbirnyk naukovykh prats. Vol 4(6). pp. 19-29. URL:http://ap.uu.edu.ua/article/279 (in Ukrainian)

3. Zastosuvannia IKT dlia monitorynhu rezultativ navchalnoi diialnosti studentiv. URL:https://sites.google.com/site/alinapolchenkoo/home/vikoristanna-komp-utera-v-navcalno-vihovnomu-procesi (in Ukrainian).

3.2. Services and tools for evaluating written works

Learning diagnostics is a mandatory component of the educational process, which is aimed at determining the level of achievement of the set goals and includes control, verification, accounting, evaluation, accumulation of statistical data and their analysis, reflection, identification of the dynamics of educational changes and personal progress of the student, redefinition of goals, clarification educational programs, adjusting the learning process, forecasting further changes and development of the educational process. Today in Ukraine, in the context of the modernization of the content of education, the importance of creating new approaches to the diagnosis of the educational process, in particular the assessment of the educational results of students, is widely discussed.

There are two basic types of assessment:
– summative (summary) assessment;
– internal (formative) assessment.

Formative assessment is understood as an interactive assessment of learners' progress, which enables the teacher to determine the needs of learners and adapt the learning process accordingly. Approaches to comparing standardized and formative assessment are presented in Table 3.1.

Table 3.1

Comparison of summative and formative assessment

Standardized assessment	Formative assessment
• Assessment of subject knowledge	• Evaluation of project activity results
• Evaluation of the final result	• Assessment of independence, cooperation, learning process
• Evaluation by the teacher	• Evaluation by students, self-evaluation
• Receiving a report on the results of student learning, their ranking	• Obtaining a more complete picture of each student's education, in particular, his progress in achieving goals

We will talk about internal (formative) evaluation, which involves evaluating the achievements of students. This method is aimed at determining the individual achievements of each winner. The main purpose of formative assessment is not only to check the acquired knowledge and developed abilities and skills of the students, but also to achieve other goals (Table 3.2).

Table 3.2

Types and goals of formative assessment

Types of formative assessment	Assessment objectives
Entry/preliminary assessment	Determination of the student's educational needs
	Encouraging students to be self-directed in learning and cooperation
Current assessment	Tracking progress in student learning
	Checking how students understand the specifics of their own thinking and encouraging them to reflect
Final assessment	Checking the level of student knowledge and skills

Formative assessment is used in those cases when students analyze their learning process while working on educational material. At the same time, the evaluation goals set before the start of the work change during it (Fig. 3.3).
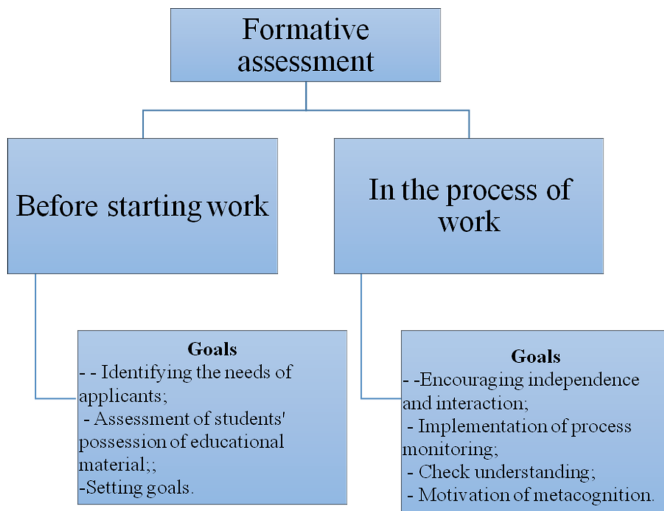
Fig. 3.3. Purposes of using formative assessment

The basic principles of formative assessment are:

1. Student-centered approach. In the center of attention is the student of higher education. The main goal is how to improve and develop learning.

2. Directed by the teacher. Autonomy, academic freedom and high professionalism of the teacher, since it is he who determines what to evaluate, in what way, how to react to the information obtained as a result of the evaluation.

3. Versatile effectiveness. The student's participation in the assessment develops self-assessment skills, students dive deeper into the material, learn it better.

4. Affects the educational process. The purpose of formative assessment is to improve the quality of education, it is not related to a specific point scale and can be anonymous.

5. Determined by the context. Forms and evaluation criteria depend on the specific situation.

6. Continuity. Using a set of simple techniques, the teacher organizes feedback: self-evaluation sheets, mental maps, assessment by result, etc.

7. Reliance on quality teaching. Formative assessment should be based on the high professionalism of the teacher.

Constant, continuous assessment provides data on how the student acquires knowledge, so based on it, the teacher and learners can plan and implement certain actions. It is the joint actions of the teacher and the student that make such an assessment "formative". It is known that when students and teachers alike understand the goals and expected learning outcomes, the learning process becomes more effective. Applicants should be interested in the results of training, and at any time establish at what stage of achieving their goals they are, evaluate the accuracy of the actions and operations performed, adjust, if necessary, and understand when the expected result has been achieved. Thus, formative assessment is a "feedback" for achievers that allows them to understand what actions should be taken to improve their own results.

The benefits of formative assessment for the teacher and student are shown in Table 3.3.

The concept of "assessment" is summarized as presented in Table 3.4. Answers to the questions listed in the table can serve as guidelines for constructing a formative assessment model in a specific class.

Table 3.3

Opportunities provided by formative assessment

For the teacher	For a student
• clearly formulate the educational result that needs to be obtained and evaluated in each specific case, and organize your work accordingly; • make the student a subject of educational and assessment activities	• learn from mistakes; • to understand what is important and what is secondary; • to understand what they are good at – there are successes; • determine what they do not know; • identify what they cannot do

Table 3.4

Opportunities provided by formative assessment

	External (standardized)	Internal (formative)
Who?	An entity that does not directly participate in the process навчання	A teacher who teaches
What?	The fact of completing tasks, stages of tasks	The ability to present the acquired knowledge, the method of performing tasks, the results and the method of achieving them, the level of students' mastery of competencies, etc.
Why?	Fixes the level of achievement of students based on the results of mastering a specific topic (section)	Diagnoses difficulties, motivates, supports success in achieving educational goals, identifies educational needs
How?	It involves comparing one student with others by comparing each work to a benchmark	Determines the level of individual achievements of each student. Does not involve comparison of results
For whom?	It is aimed at the entire population of students	Focused on a specific student

At the same time, assessment methods and tools are undergoing changes, some of which are presented in Figure 3.4.
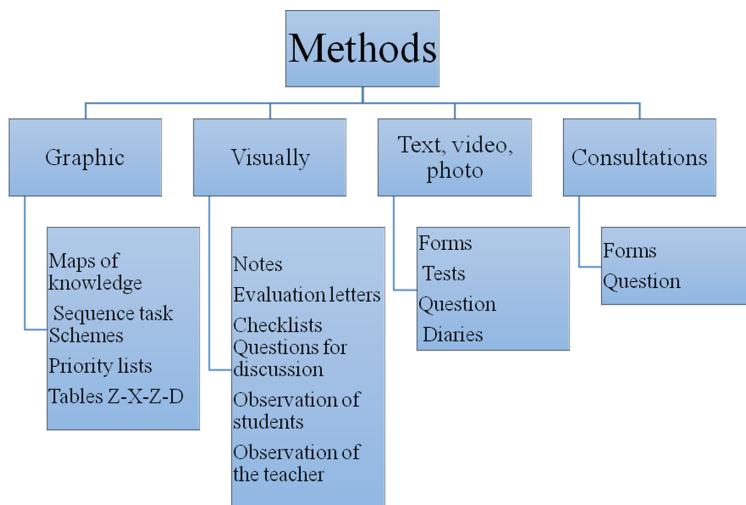
Fig. 3.4. Formative assessment methods and tools

One of the tools of formative assessment is written assessment. Currently, numerous software tools and platforms have been developed that are aimed at providing assistance to the teacher to carry out written assessment. As a result, it provides teachers with strategies that are embedded in the learning process in which learners gain a deeper understanding of what they have learned, think at a higher level, and become purposeful in their learning.

In the conditions of the distance learning format, the role of written works increases many times. Written works become the main means of feedback for the teacher. These can be exercises from textbooks; tasks offered on educational platforms; interactive worksheets prepared by the teacher; tests and practical tasks that are sent to teachers by e-mail or posted on the educational platform; essays, reports and much more. The easiest way to provide completed written work to the teacher is to send it by e-mail. It can be scanned handwritten texts; texts typed in text editors; tasks performed on the basis of templates provided by the teacher, etc. But this method cannot be called convenient for the teacher and students, especially if the teacher teaches several subjects.

1. One of the options for simplifying interaction is the use of cloud storage. Cloud storage as a place to place tasks, completed works and assessment results. Everyone knows that cloud storage ("the cloud") allows

you to store and manage data (download, transfer, process and delete). The advantages of cloud storage are access to resources from any mobile device.

Thanks to an Internet connection, the disk space of such storage can be used by the selected computer as one of the local disks. This is achieved through the use of special Internet protocols that allow creating data storage networks (example: SAN (Storage Area Network)).

The cloud folder is a convenient resource that is used to implement work and business processes, as well as for personal purposes. Everyone knows their names: Dropbox, Google Drive, OneDrive, etc.

In all cases, the amount of disk space can be significantly expanded at the expense of paid services. Dozens of file types are supported. The teacher can use cloud storage, both for posting his own tasks and for posting the completed works of students with the results of their evaluation.

2. Interactive worksheets An interactive worksheet is an electronic resource created by the teacher using co-editing documents for independent work individually or together. The possibilities of creating interactive worksheets are provided by documents created, for example, using the https://app.wizer.me service.

The technology of using an interactive worksheet:

– The teacher creates and publishes an interactive worksheet in the e-learning environment (by linking or inserting the code into the page).

– The teacher also additionally creates a copy of this sheet to clone the template to each student. To this end, the sharing settings are set to editable for any user who has the link.

– The acquirer independently renames the cloned letter and can modify and edit it (perform tasks).

– After completing the task, the winner publishes his worksheet using a URL in the e-learning environment (website/blog), thereby presenting his work to others.

3. Using the Moodle platform.

This platform is a free open distance learning management system. Allows you to use a wide range of tools for educational interaction between the teacher and students, including for the evaluation of written works, in particular:

– present educational material in various formats (text, presentation, video material, web page);

– perform tasks by acquirers with the ability to forward the relevant files. In addition, the system has a wide range of tools for monitoring students' learning activities.

For example, regarding the total time of the student's work with a specific educational course, relevant topics or constituent elements of the educational material, the overall success of the student or class during the performance of test tasks, etc.

4. Cloud services (Office 365, Google) for the joint work of applicants and the teacher.

The Google Drive cloud service provides opportunities to create a multifunctional user environment, productive and convenient for students and teachers, for sharing files, structuring and saving them in one place.

Google form. It is possible to collect students' answers and then carry out automatic assessment of test results.

2. Google Forms – https://www.google.com/intl/uk_ua/forms/about/ A tool for creating tests with the ability to set the number of points for tasks and correct answers. You can make the check automatic, but if there are tasks that require additional checking, you can do part of the check manually and only then issue the result. In this case, you can send the results to the specified mail address.

Classtime. There is a library of resources, but there is also an opportunity to create questions. Learningapps. Allows you to create exercises of different types on different topics or use ready-made ones.

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5. The Classroom environment allows you to organize online training using video, text and graphic information, various Google applications. The teacher has the opportunity to control, systematize, evaluate activities, review the results of exercises, apply various forms of evaluation.

Google Classroom provides many opportunities for the teacher to check the level of learning of the educational material by the students. The teacher can see the general picture of the status of the students' performance of tasks: the number of students who have completed the tasks and their names; how many students have not completed yet, and who exactly. The teacher, after checking the work of any kind, returns it to the student with a grade or with a proposal to complete it.

After the student completes the task and sends the answer in the form of a file, the teacher starts checking: the work files will be saved on the teacher's Google Drive, the content of which can be viewed using a PC, if the process of connecting the Drive to the file system of a personal computer is completed.

To do this, you need to go to the "Students' works" section and select from the list the person who passed the assignment, check and grade it. It is convenient for the teacher to keep track of tasks that have already been completely completed, which are automatically sorted into checked and unchecked. In order for the student to receive a message about the result of the check, it is necessary to click on the "Return" window, along with this, the teacher can comment on the work. Thus, the process of evaluation of works covers all schoolchildren.

The use of **Google Classroom** is only part of the system of interaction between students and teachers in a single information and educational space built on the basis of Google Suite for Education services.

Students also have their own accounts, and most (eventually all) already know how to use them. But, if necessary, you can conduct a short instruction:

• log in to your cloud account by entering your own "login" and "password"; and using the main menu of the Google Chrome browser to get to GoogleClassroom;

• select "Student";

• enter the class code or join at the teacher's invitation.

After joining the course, the student, by clicking on the mark in the upper left corner (the main menu of the page), can very quickly go to the page of the new course. The student will notice the assignment not only in the Google Classroom application, but will also receive a notification to his e-mail. Children like the fact that on the side panel of the "Class" application tasks are displayed in chronological order with a reminder of the deadlines for their completion and submission to the teacher. Thanks to the presence of such a function, it becomes almost impossible to forget to complete a task at a certain time.

Having opened and completed the task, the student makes a note of its completion by clicking in the window "OPEN" to the right of the task and choosing one of the ways to add a file with the completed task by clicking on the words "ADD" or "CREATE". After that, the mark "DONE" appears.

The student submits completed tasks to the teacher, the status "REVIEW" appears on the document.

After the work is returned by the teacher, which the student will know by the appearance of the icon "RETURNED", the grade can be seen by clicking on the "OPEN" window. There is also an opportunity to view comments on the work, correct errors and resubmit the work by clicking on the "RESUBMIT" window.

So, we see that there is a constant connection between the teacher and the students, and the teacher can:

– return work an unlimited number of times;

– send comments to individual or all students.

In the **Google Class program**, teachers can publish links to dictionaries, video lessons, presentations in tasks or in the news feed, have the opportunity to download their own presentations or create them together with students, opening access for the whole class or for a certain group of students separately.

As for the written works (essays, works, own statements, editing and analysis of texts, etc.) provided by the program, it should be noted that the service has functions for checking such works.

Teachers can check the written work submitted by the student, correct and analyze the errors, and then send the checked file to the student to work on the errors. By the way, creating and checking tasks in the electronic service is faster and more convenient than on paper. Some errors are corrected by the program. What the service did not "see", the teacher crosses out and corrects in green, writing the correct option next to it. The program immediately saves grades, that is, another advantage – you will immediately have an electronic journal.

As for the tests, they can be organized by developing 2 options and opening access to a certain option to each student separately to avoid writing off. For control works, there is another function – setting a deadline for the task, as well as a developed evaluation system (both functions are located on the right panel and are set in manual mode).

After assigning grades for any tasks, just like when working with other services, we save them in an Excel journal on our PC.

So, taking into account the above, we can conclude that Google services will help to monitor how effectively students perform tasks.

Students can work on assignments in Google Docs together or individually. The teacher has the opportunity to monitor the progress of schoolchildren within the limits of the proposed tasks and to control the implementation process, to direct the activities of each child.

Based on the results of such observations, it will be useful for the teacher to create a Google table ("Progress Table"), where the names of the students are written in the rows, and the list of tasks (steps) that the students must complete (pass) in the columns, and to give students access to edit. They go to this table and mark the completed task with a color based on how easy it was for them to work (eg green, yellow or red).

In order to organize an effective evaluation of the educational achievements of students in remote mode, it is useful to carry out the following indicative actions:

• Create google-sheets, where each student will have access to commenting, and only after his report on the completion of a certain task will an evaluation mark appear there.

• Tasks should be divided into basic tasks that have deadlines and optional tasks that create an individual learning trajectory and give additional points.

• Establish communication in the social network chat (chosen by the students and the teacher), which has almost no time limit, and the main information is stored there.

• Choose online resources for performing various types of tasks and their assessment.

• The teacher should create an electronic journal in Excel to accumulate student grades, which will be stored on his own computer, so that later thematic and semester grades can be issued without problems.

6. LInoit – Universal online service for working with sticky notes (Fig. 3.5). You can add images, videos, and text files to the virtual board. The created stickers can be moved, rotated, and their position fixed. There are tools for adding a date, editing and deleting posts. Each sticker has a number. All material is placed on one page. It is possible to create groups, view other users' boards.

7. Socrative – https://socrative.com/ A free web service that allows you to assess students using prepared tasks or questions in the feed. The limit is 50 students in one group.
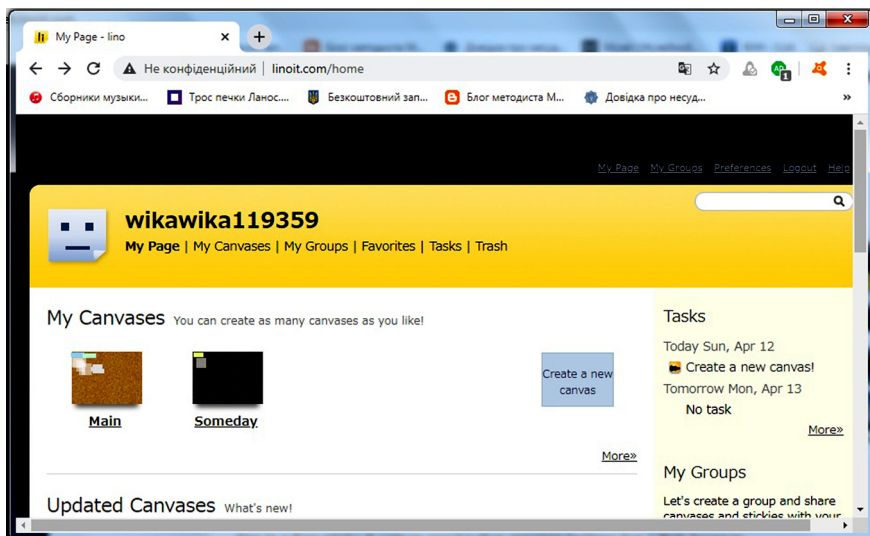
Fig. 3.5. The window for starting work with the interactive whiteboard "Linoit"

The Socrative online service is already used by more than one million teachers and students worldwide, and the number is growing every day.

Once registered, using an email address and password, the teacher can launch the Socrative service at any time, even from a personal smartphone, and conduct tests or surveys of students. The service allows you to use it both in the classroom for quick surveying and testing during the course of the material, and for distance learning. Socrative can be used for blended learning outside of the classroom.

After completing the test, the teacher can conduct a short survey of students using the Quick Questions service to find out possible problems in learning the material.

To conduct such a survey, the service offers three options. The first, in which the teacher asks questions with different options for answers, is Multiplay Choice (Fig. 3.6).

The second version of the survey, when the teacher offers to choose a correct or incorrect answer, is True/False (Fig. 3.7).

In the first and second versions of the survey, you can use previously prepared questions (quiz-based activities) in the form of a test, choose one
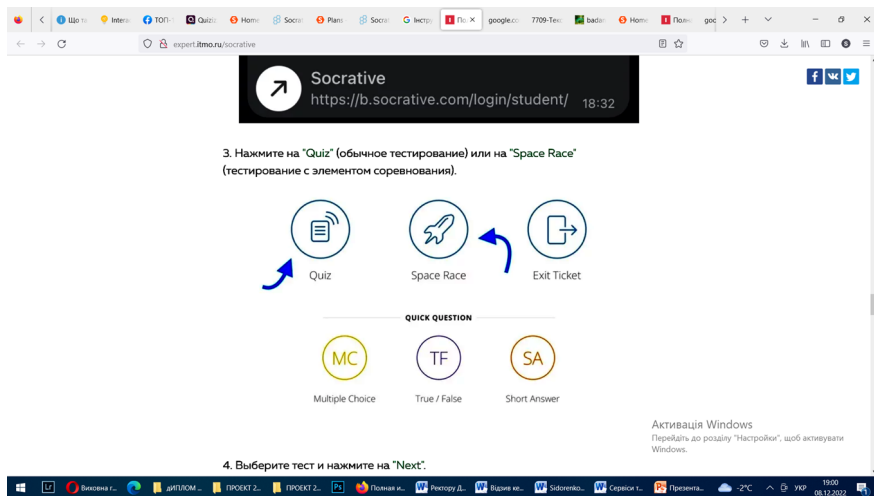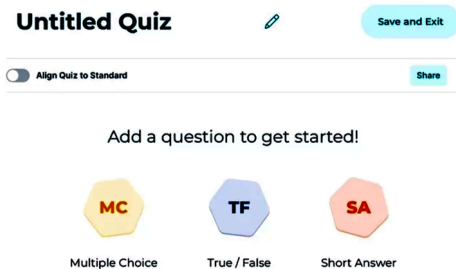
Fig. 3.6. Multiplay activity window

**Fig. 3.7. True/False activity window**

answer from several options or in the form of "correct" or "wrong" or short questions.

The third, when students can independently write a short answer to the teacher's question, is Short Answers (Fig. 3.6).

8. Wooclap – https://www.wooclap.com/ The Wooclap platform is used by universities for educational activities and is available in 6 languages. There is free access (maximum connection of 1,000 students). Instant feedback allows the audience to answer questions in real time.

9. Padlet is a virtual interactive board for organizing joint work with various content and the possibility of simultaneous editing by several users (Fig. 3.8, 3.9). A convenient, easy-to-use service, thanks to which it is possible to design a board and fill it with data, organize shared access of users to it, export it to various formats, and post it on social networks. You can add graphic, text and multimedia (video or presentation) files, links to web pages, notes, and webcam shots to the virtual whiteboard.
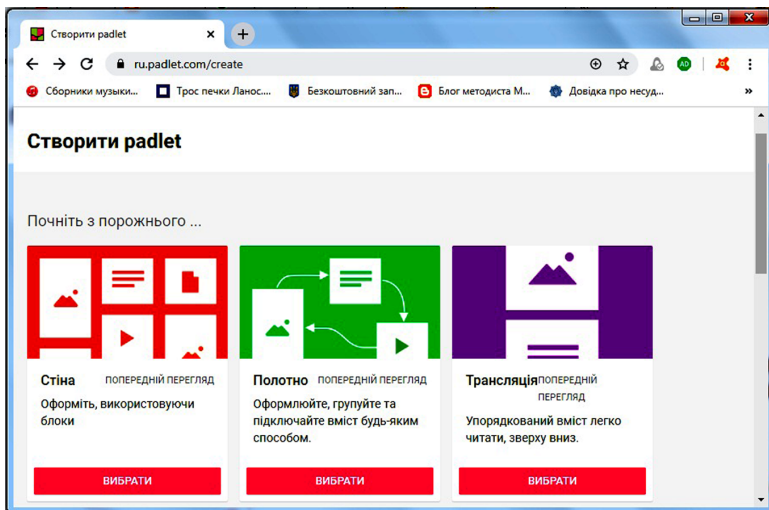
Fig. 3.8. The window for starting work with the interactive whiteboard "Padlet"

It can be an individual board, a moderated board with several participants who will fill it with information, or a platform for sharing information that can be read and edited by any user. The service does not limit the user in the number of created pages. Radlet works on all devices: mobile, tablets, netbooks. You can configure the function of editing the wall for other users, allow full access, set a password or invite users by e-mail.

In recent decades, formative assessment has been actively implemented in the world, in particular in EU countries, and is gaining more and more importance in Ukraine. Its features are assistance in the formation and development of the student's personality, which is achieved by providing effective feedback to the student, active participation of the student in the learning process, constant adjustment of the educational process, motivating
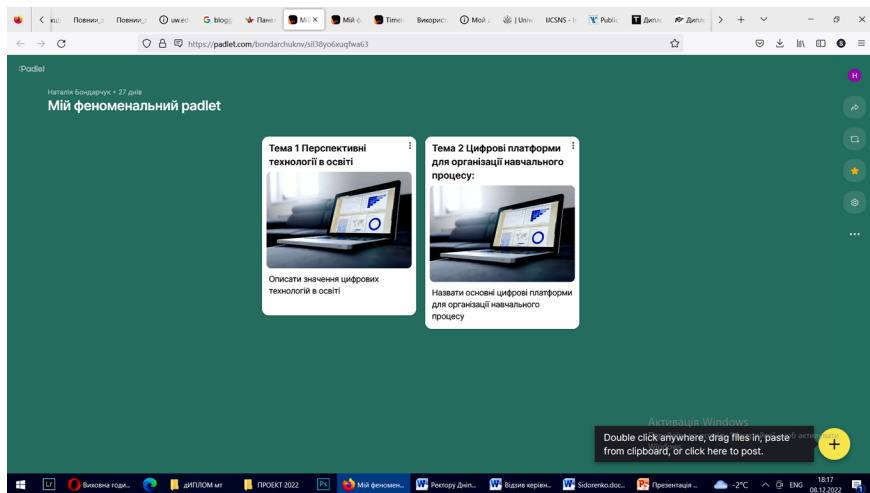
Fig. 3.9. Sample board created using the "Padlet" service

the student, awareness of responsibility for his own learning. A large number of specialized software tools for teaching and evaluating the educational process are being created and developed. All of them are already widely used in practice by teachers of Ukraine.

The specified list and description of Internet platforms is not exhaustive, but it provides the teacher with an understanding of the possibilities of modern technologies in the field of formative assessment and the educational process. Since at the moment the use of these tools is not regulated by Ukrainian legislation, it is the teacher who is given the opportunity to determine the feasibility of using and choosing a software tool for teaching. Effective use of ICT for the purpose of formative assessment of students depends only on the teacher, his desire and the resources provided to him. This means that the use of formative assessment technology using ICT tools at the current stage can become one of the key levers of ensuring quality education.

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3.3. Online visualization tools for organizing activities and evaluating the achievements of applicants

In the conditions of distance learning (E-learning), teachers and students encountered certain limitations of available learning methods and complications in the perception of educational information. To increase the effectiveness of the available resources and platforms for presenting educational information, it is expedient and important to use online visualization as a method of presenting information by visualizing information, creating conditions for visual (with the naked eye or using an optical device) observation using various techniques and online tools.