МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
Інститут педагогіки Національної академії педагогічних наук України
Інститут цифровізації освіти Національної академії педагогічних наук України
Національний університет «Чернігівський колегіум» імені Т.Г. Шевченка
Вінницький державний педагогічний університет імені Михайла Коцюбинського
Тернопільський національний педагогічний університет імені В. Гнатюка
Université Côte d'Azur (France)
Ліцей «ДОМІНАНТА» міста Києва
Києво-Печерський ліцей № 171 «ЛІДЕР»
Український державний університет імені Михайла Драгоманова
Кафедра інформаційних технологій і програмування

МАТЕРІАЛИ

ІІ Всеукраїнської науково-практичної конференції

ТЕОРІЯ І ПРАКТИКА ВИКОРИСТАННЯ ІНФОРМАЦІЙНИХ ТЕХНОЛОГІЙ В УМОВАХ ЦИФРОВОЇ ТРАНСФОРМАЦІЇ ОСВІТИ

КИЇВ – 2024

УДК 37.014-044.922:004(082)
Т33

Рекомендовано до друку Вченою радою
Українського державного університету імені Михайла Драгоманова
(протокол № 11 від 27 червня 2024 р.)

Т33 Теорія і практика використання інформаційних технологій в умовах цифрової трансформації освіти: *матеріали II Всеукраїнської науково-практичної конференції, 19 – 20 червня 2024 року м. Київ* / Упорядник: Твердохліб І.А. Київ: Вид-во УДУ імені Михайла Драгоманова, 2024. – 242 с. - електронне видання.

Збірник містить матеріали доповідей учасників II Всеукраїнської науково-практичної конференції «Теорія і практика використання інформаційних технологій в умовах цифрової трансформації освіти».

Доповіді присвячені методичним аспектам використання сучасних інформаційних технологій в освітньому процесі, проблемам модернізації змісту інформатичної середньої та вищої освіти в умовах цифрової трансформації суспільства, особливості впровадження STEAM в освітній процес. Розглянуто актуальні в даний час питання використання штучного інтелекту в освітньому процесі, досвід і перспективи цифровізації освіти України.

Матеріали подано в авторській редакції

ISBN 978-966-931-304-1

СЕКЦІЯ 1
СУЧАСНІ ЦИФРОВІ ТЕХНОЛОГІЇ В ОСВІТІ

DIGITAL TOOLS FOR ACTIVATING STUDENTS' COGNITIVE ACTIVITIES AT INTEGRATED INFORMATICS AND ROBOTICS LESSONS IN CONDITIONS OF BLENDED LEARNING

Viktoriia Konofolska
Dragomanov Ukrainian State University, Kyiv, Ukraine
viktoriakonofolska@gmail.com

Introduction. Developing students' learning interest is one of the vital problems of educational process. Successful learning is clearly dependent on students' motivation. Shaping and development of their cognitive interest is crucial for keeping up their motivation. Organization of learning includes modelling of real life and non-standard situations, setting up role plays, arranging competitions, working together to solve problems.

The principles of activization of students' learning and cognitive activities should be selected taking into account peculiar featured of educational process (face-to-face lessons, online lessons, blended lessons) or be versatile for all forms of learning.

To sum it up, we can distinguish the following factors facilitating students' cognitive activities:

- professional interest and engagement;
- creative tasks;
- inquiry-based tasks;
- competition.

Let us consider some digital tools, which may help teachers activate their students' cognitive activities at Informatics and Robotics lessons.

Collaborative services. The activity that is considered cooperative is the activity in the course of which:

- tasks are perceived as group tasks that require cooperation in the process of their solution;
- there is mutual dependence in the performance of work, which requires distribution of duties, mutual control and responsibility.

Collaborative work services can be used by the teacher to activate the cognitive activity of students, to ensure more effective interaction in the classroom regardless of the forms of learning, to increase the productivity of students. Also, the teacher can distribute the duties and roles of the students during the performance of a joint task, taking into account their intellectual and creative abilities. However, the organization of such tasks requires the teacher to take into account the nature of students' interactions, their sympathies and antipathies, the motivation for interpersonal relationships, readiness for cooperation, and their own ability to organize the lesson and discipline.

Draw Chat. Draw Chat [1] (creative tasks) – a teacher can use the service to organize real time collaborative activities at face-to-face, online and blended (hybrid) lessons. The tools of the service enable participants to note important issues, draw various

images of objects or their elements, connect different objects with arrows etc. A teacher may share a collaborative task, start a discussion or set a task and then send a link. Each student can share their ideas on a virtual board and familiarize themselves with their peers' ideas. An important task of a teacher while working with AWW Board is high level of classroom management, which implies making sure that everybody is following the rules and working without breaking into someone else's virtual space.

Microsoft WhiteBoard. Microsoft WhiteBoard [2] (creative nature of the task) - a service that allows all participants of the educational process regardless of the form of learning to take part in the solution of a joint problematic task or to follow the process of solving a specific educational task. The convenience of this service is in the ability to invite participants to collaborative work without registration, as well as to create a separate virtual board during a broadcast in Microsoft Teams, which can be accessed by all participants of the videoconference. By installing the appropriate application on your own device, the user can expand the WhiteBoard toolbox. Additional tools of the service include the ability to add parts of .docx, .pdf, .pptx documents in image format, as well as mathematical tools such as the ruler and the protractor.

Jamboard. Jamboard [3] (creative nature of the task) – a collaborative service in the form of a digital conference board where users from all over the world can record their ideas and store them in the cloud for later access from any device. This is a kind of alternative to Google's WhiteBoard service. Features of this service is a tool laser pointer, allowing the teacher for a short time to see important information on the screen, to focus attention on them. You should also pay attention to the possibility to turn the body in the form of a page of the workbook (into a line, into a cell), which will allow you to demonstrate and fulfill specific tasks more accurately.

Learning games created by teacher according to the topic studied. Didactic games are especially needed in teaching and learning of children of young school age. Thanks to the games can concentrate attention and engage all students in the lesson. Initially, they are only interested in game activities, and then those for which the game teaches. Gradually children become interested in the subject. The structure of the game as an activity organically includes planning, implementation of the goal, as well as the analysis of the results. Motivation of game activities is ensured by its goodwill, possibility of choice and elements of competition, satisfaction of the need for self-confidence, self-fulfillment. A very important point in the use of educational games is the possibility of their individualization for a particular group of children.

Wordwall. One of the most popular services of this kind is Wordwall [4], which enables creating enquiry-based tasks. The main tools of the service used for activation of students' cognitive interest are:

- Random Wheel, a randomizer of questions and tasks, which helps avoid conflicts occurring while "unfair" task distribution.
- True or False game, which proved to be a highly efficient tool in discussion about controversial issues like Media literacy in the information space and Search requests.
- Maze Chase, Airplane, which students love and get excited about, are learning games, whose educational value lies in their shaping students' ability to focus on searching the correct answer and memorizing it.

- By using Wordsearch a teacher can help students revise the material learnt at the previous lesson or sum up the current lesson involving each and every of them no matter whether they are in online class.

Revision in the form of competitive activities. Competitiveness shows itself in a special way at the lessons held in the form of a game, which are competitive and involve professional interest, thus efficiently facilitating students' cognitive activities. Games encourage everyone to act. The platforms which are most suitable for learning games are Quizizz and Kahoot.

Quizizz. Quizizz [5] (competition mode) teachers to create online tests, polls and quizzes. The application can be used at any stage of a lesson. If at the start of the lesson students do a quiz aimed at checking their homework and one of the questions concerns something they haven't learnt yet, the teacher may guide them to the topic of the lesson and the lesson aim. It is also possible to organize group work as results are visualized as a ranking chart showing which team won. The teacher can track each student's activity and analyze the work of the class. The use of Quizizz helps students learn how to control their activity to succeed.

Kahoot!. Kahoot! [6] (competition mode) is an alternative to the above mentioned service. The platform includes a number of functions, which can involve and motivate students. It is possible to add images and videos to tasks created on Kahoot. When a question appears on the screen there is different music for different questions, as well as special sounds reminding players that the time they have to answer the question is limited. The teacher can track each student's activity and analyze the work of the each one.

Conclusion. Using a variety of digital tools enables teachers to diversify their methodology, to make their students' learning more efficient by facilitating their knowledge and skills acquisition, increasing their involvement in learning subjects, namely Informatics and Robotics. Motivation is one of the crucial conditions of learning, thus it is vital for every teacher to reveal the educational needs, difficulties and problems of their students and use the optimal methods of motivation and stimulation of their activities in order to practice learner-centered approach.

References:

1. Draw Chat. URL: https://draw.chat/index.html
2. Microsoft WhiteBoard URL: https://app.whiteboard.microsoft.com
3. Jamboard. URL: https://jamboard.google.com
4. Wordwall URL: https://wordwall.net
5. Quizizz URL: https://quizizz.com/admin
6. Kahoot! URL: https://kahoot.com
7. L. Shevtsova, Activation of students' cognitive activity with the help of situational tasks, Dyvoslovo 12 (2001), pp. 43-45.
8. Ye. Puzirevich, Creating conditions in the classroom to increase the cognitive activity of all students, Matematyka v shkolah Ukrainy 9 (2012), pp. 2-5.
9. T. Svetlova, Forms of organization of educational activities in the classroom. Methods, techniques of teaching, Matematyka v shkolah Ukrainy 28 (2012), pp. 6-11.
10. O. Pometun, L. Pyrozhenko, Modern lesson: Interactive learning technologies, A.S.K., Kyiv, 2003.