

# ПЕДАГОГІЧНІ НАУКИ

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## IMPLEMENTATION OF INFORMATION TECHNOLOGIES TO DEVELOP STUDENTS' CREATIVE AND CRITICAL THINKING IN ESL CLASSES

**Summary.** The article is aimed at summarizing theoretical and empirical studies on the development of students' creative and critical thinking in ESL classes by means of information technologies and digital tools. Creativity and constructive criticism are the 21<sup>st</sup> centuries essential skills. The novelty of the study deals with critical overview of the latest multidisciplinary works. The purpose of the research is to consider the implementation of new information technologies to develop students' cognitive skills. Creative thinking focuses on person's abilities to come up with new, non-standard, original solutions to problems and challenges. Critical thinking means a way of thinking in which people have an attitude involving questioning such arguments and conclusions. Development of critical and creative thinking is tightly connected with the use of Bloom's Taxonomy, a hierarchical ordering of cognitive skills. Revised Bloom's taxonomy implies 126 digital planning verbs. Based on Bloom's taxonomy, teachers plan educational goals and objectives, project specific methodological steps with the help of didactic tools and achieve excellent learning outcomes. Constituents of the educational process such as setting and assessment of course work, development of materials and visual aids, classroom practice, computer assisted language learning enable to enhance collaboration between a teacher and students in ESL classes. Information competence is an integral part of a foreign language teacher's professional competence. A comparative analysis of the latest educational digital tools according to some criteria is highlighted in the paper with the purpose to popularize innovations in education. It is emphasized that information technologies act as a link between educational materials and learning outcomes and encourage students to think broadly and use skills, such as resourcefulness, imagination, constructive criticism.

**Keywords:** information technologies, creative and critical thinking, 21<sup>st</sup> century skills, revised Bloom's taxonomy, teaching ESL, learning outcomes.

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## ВПРОВАДЖЕННЯ ІНФОРМАЦІЙНИХ ТЕХНОЛОГІЙ ДЛЯ РОЗВИТКУ ТВОРЧОГО ТА КРИТИЧНОГО МИСЛЕННЯ СТУДЕНТІВ У ПРОЦЕСІ ВИВЧЕННЯ АНГЛІЙСЬКОЇ МОВИ

**Анотація.** У статті висвітлено теоретичні та емпіричні аспекти у процесі розвитку творчого та критичного мислення студентів під час вивчення англійської мови за допомогою інформаційних технологій та цифрових інструментів. Креативність, конструктивна критика – найважливіші навички XXI століття. Новизна дослідження полягає в критичному огляді новітніх мультидисциплінарних наукових праць за заданою тематикою. Метою дослідження є розгляд впровадження новітніх інформаційних технологій та цифрових інструментів з метою розвитку когнітивних навичок студентів. Креативне мислення пов'язане зі здібностями людини придумувати нові, нестандартні та оригінальні вирішення проблем та складних завдань. Критичне мислення – здатність та спосіб мислення, при якому людина ставить під сумнів інформацію, що надходить, а також власні переконання. Критичне мислення часто протиставляється творчому мисленню. Розвиток критичного та творчого мислення тісно пов'язан з використанням таксономії Блума, ієрархічного упорядкування когнітивних навичок. Переглянута таксономія Блума включає 126 дієслів планування. Грунтуючись на таксономії Блума, викладачі планують освітні цілі та завдання, проєктують конкретні методологічні кроки за допомогою дидактичних інструментів та досягають високих результатів навчання. Складові навчального процесу, такі як постановка завдань та аналіз досягнутих результатів роботи, розробка наочних матеріалів, аудиторна практика, вивчення мови із застосуванням інформаційно-комунікаційних технологій дозволяють розширювати співпрацю викладача та студентів в освітній діяльності. Інформаційна компетентність – невід'ємна частина професійної компетентності фасилітатора іноземної мови. З метою популяризації інновацій в освітній діяльності запропоновано порівняльний аналіз новітніх освітніх цифрових інструментів за критеріями. Наголошено, що інформаційні технології діють як сполучна ланка між навчальними матеріалами та результатами навчання та спонукають студентів мислити креативно та нестандартно, а також допомагають формувати такі навички, як винахідливість, уява, конструктивна критика.

**Ключові слова:** інформаційні технології, творче та критичне мислення, навички XXI століття, переглянута таксономія Блума, вивчення англійської мови, результати навчання.

**Problem statement.** In the epoch of globalization, pandemic threats, rapid, unforeseen changes in the world modern teachers face a lot of challenges. These factors encourage them to improve and update their knowledge and skills. They tend to approbate a great number of innovative

methods and tools to achieve professional results and be competitive in a labour market. A list of the twenty-first skills emphasizes the development of complex problem solving, critical thinking, creativity, people management, coordinating with others, emotional intelligence, judgment and decision-making, service orientation, negotiation, cognitive flexibility. Thus, studies on the implementation of the latest information technologies to develop students' creative and critical thinking in ESL classes are a great multidisciplinary challenge.

**Recent research and publications.** The analysis of psychological and pedagogical literature and pedagogical practice highlighted a great number of studies, the subject of which was the use of information technologies in the educational process. Studies of national researchers such as V. Yu. Bykov, O. H. Hlazunova, A. M. Hurzhii, M. I. Zhaldak, V. F. Zabolotnyi, A. M. Kolomiets, O. H. Kolhatin, A. B. Kocharian, V. M. Kukhareno, A. F. Manako, O. A. Mishchenko, N. V. Morze, V. V. Osadchyi, L. F. Panchenko, S. O. Semerikov, O. V. Spivakovsky, O. M. Spirin deal with multidisciplinary facets in this area [3, p. 1]. Issues of IT competence and teachers' training are also disputable in national and international scientific schools. Development of students' cognitive-intellectual abilities based on creative and critical thinking activities in the English language classroom are described in details in the articles of O. V. Babenko, A. Maley, N. Peachey, M. Clarke, A. Tatsumi and many others [1; 2; 4; 5; 6; 7; 8].

**The novelty of the study** deals with a critical overview of the latest multidisciplinary theoretical and empirical studies on the topic of the research.

**The purpose of the research** is to consider the implementation of new information technologies to develop students' creative and critical thinking in ESL classes.

General-scientific **methods** have been used to systematize information.

**Presentation of the main material.** Nowadays all societies are vitally interested in strengthening individuals' innovative thinking and problem-solving skills to overcome the economic and social disruption caused by the pandemic. Everyone needs to be inventive and adaptive in a constantly changing reality. Creativity is a complex dialectical process that has certain stages and its own mechanism of implementation. A creative person is someone who finds the newest and the most challenging ways of doing things. Risk-taking is an essential trait of a personality's character. Creativity can be measured by the ability to accept making mistakes and looking at things from a fresher, different angle or perspective. *Creative thinking* is about using person's abilities and to come up with new solutions to problems and challenges. It is a skill and, like any other, it needs constant training.

"*Critical thinking* means making reasoned judgments. It is a way of thinking in which people have an attitude involving questioning such arguments and conclusions. It requires to see what evidence is involved to support a particular argument or conclusion [8]". Critical thinking is important because it makes students get out of their comfort zone and challenge their misconceptions about the object, fact, person, data and create new, better-ones.

Development of critical and creative thinking is tightly connected with the use of Bloom's Taxonomy, a hierarchical ordering of cognitive skills. *Revised Bloom's taxonomy* implies the following digital planning verbs: *remembering, understanding, applying, analyzing, evaluating, creating*. They deal with a number of instructive verbs [9]:

*Remembering*: coping, defining, finding, locating, quoting, listening, googling, repeating, retrieving, outlining, highlighting, memorising, networking, searching, identifying, selecting, tabulating, duplicating, matching, bookmarking, bullet-pointing.

*Understanding*: annotating, tweeting, associating, tagging, summarizing, relating, categorizing, paraphrasing, predicting, comparing, contrasting, commenting, journaling, interpreting, grouping, inferring, estimating, extending, gathering, exemplifying, expressing.

*Applying*: acting out, articulate, reenact, loading, choosing, determining, displaying, judging, executing, examining, implementing, sketching, experimenting, hacking, interviewing, painting, preparing, playing, integrating, presenting, charting.

*Analyzing*: calculating, categorising, breaking down, correlating, deconstructing, linking, mashing, mind-mapping, organizing, appraising, advertising, dividing, deducing, distinguishing, illustrating, questioning, structuring, integrating, attributing, estimating, explaining.

*Evaluating*: arguing, validating, testing, scoring, assessing, criticizing, commenting, debating, defending, detecting, experimenting, grading, hypothesizing, measuring, moderating, posting, predicting, rating, reflecting, reviewing, editorializing.

*Creating*: blogging, building, animating, adapting, collaborating, composing, directing, podcasting, wiki Building, writing, filming, programming, simulating, role playing, solving, mixing, facilitating, managing, negotiating, leading.

Based on Bloom's taxonomy, teachers plan educational goals and objectives, project specific methodological steps for the development of critical and creative thinking with the help of didactic tools and authentic resources and achieve the best results.

Creative and critical thinking is not a fad. It is one of the 21<sup>st</sup> century skills to prepare ourselves and future generations to live and work in the unpredictable world.

In this regard we can emphasize the role of a teacher in the contemporary educational process. According to our observations the following features such as resourcefulness, skills to transfer knowledge, leadership, empathy, being autonomy-supportive are typical of creative teachers.

They face a number of challenges to be innovative and creative. Firstly, it makes sense to start teaching these types of thinking as early as possible. Secondly, it's necessary to organize activities through Bloom's digital taxonomy verbs that are highly motivating and thought-provoking. Thirdly, teachers should encourage mutual understanding and respect, develop intellectual empathy, which implies the ability to put oneself in someone else's place and understand partners' thoughts and feelings. Moreover, setting and assessment of course work, development of materials and visual aids, classroom practice, computer assisted language learning enable to promote and enhance education-

Table 1

## Comparison of educational digital tools

Name of a digital tool	LearningApp.org	Spatial Chat	Snap Camera + Meeting Gestures Lens	Miro (Realtime Board)	Storyboard That: Creating Digital Storyboards
URL	Learningapps.org	<a href="https://spatial.chat/">https://spatial.chat/</a>	<a href="https://snapcamera.snapchat.com/">https://snapcamera.snapchat.com/</a> <a href="https://www.snapchat.com/unlock/?">https://www.snapchat.com/unlock/?</a>	<a href="https://www.miro.com/">https://www.miro.com/</a>	<a href="https://www.storyboardthat.com/">https://www.storyboardthat.com/</a>
Primary purpose of a tool	Create and share learning tasks in the form of multimedia modules (apps).	Online mingle activities or virtual parties.	Enhance gestures via video conference apps	Online collaborative whiteboard platform.	Creating digital storyboards.
Advantages of a tool	The platform has standard and creative templates with elements of gamification.	This tool simulates “mingle activities” when students move around the classroom and talk to partners to gather information or practice a target structure .	These tools serve to create more convenient atmosphere at the lesson to use gestures to communicate, rather than unmuting a microphone.	It is a perfect platform for students to work together to write dialogues and texts, make stories or videos. Miro can be used to play board games virtually .	It is a web-based tool to create digital storyboards. It helps to develop creativity and writing skills. It is user-friendly, provides unlimited creative possibilities.
Cost	Free (no hidden costs or membership fees)	Pricing	Free	Free Plan (limited)	Free option (limited)

al process in ESL classes. As can be expected teachers resort to the use of modern digital technologies to implement the priority tasks.

Information competence is an integral part of a foreign language teacher's professional competence. It is divided into two types according to the presentation form and the method of obtaining information. Naturally, knowledge, that has passed the stage of personal appropriation (internalization), is especially important. Different contemporary didactic techniques such as mindmap, timeline, infographics, scribing. Podcasting, quizlet help to realize the stages of internalization [4, p. 363]. To satisfy any kind of educational needs more and more new digital tools appear on a regular basis. Here is a comparative table of some of them, in particular LearningApps.org, Snap Camera + Meeting Gestures Lens, Teacher Tools, SignAll Learn, SpatialChat.

**Conclusions.** To summarize, development of students' creative and critical thinking in ESL class-

es is not a fad, but one of the 21<sup>st</sup> centuries essential skills. Developing these essential skills teachers train students to look at things from different perspectives. A tendency to organize students activities based on digital planning verbs proves the feasibility. As a result, students learn to generate and evaluate new information, clarify concepts and ideas. They are taught to face challenges, make decisions and solve problems. Properly organized educational process, including setting and assessment of course work; development of materials and visual aids; classroom practice and extracurricular activities; computer assisted language learning encourage students to think broadly and use skills, such as resourcefulness, imagination, constructive criticism in all learning areas at school and in their lives beyond school. Obviously, information technologies act as a link between educational materials and learning outcomes. Furthermore, we can emphasize that being autonomy-supportive in teaching can improve students' self-regulation and performance in general.

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