

ENHANCING UNIVERSITY STUDENTS' COGNITIVE ORIENTATION IN THE CONTEXT OF DIGITALIZATION

АКТИВІЗАЦІЯ ПІЗНАВАЛЬНОЇ СПРЯМОВАНOSTІ СТУДЕНТІВ УНІВЕРСИТЕТУ В УМОВАХ ДІДЖИТАЛІЗАЦІЇ

The development of the information society and the rapid digitalization of education have made the integration of information and communication technologies (ICT) an essential component of modern higher education. This study explores ways of enhancing university students' cognitive orientation through the use of ICT in a digitalized educational environment. Research indicates that ICT contributes significantly to the formation of students' motivation, critical thinking, and independent learning skills. Active learning tools such as Web-Quests and Internet-based learning models have demonstrated their effectiveness in stimulating students' cognitive activity and engagement.

The study identifies unresolved issues in combining traditional pedagogical methods with digital tools, as well as the role of instructors in creating a digital educational environment conducive to cognitive engagement. Practical examples of ICT integration include student correspondence, planetary classes, business games, virtual meetings, mentoring, Web-Quests, competitions, and collaborative games. Detailed analysis of models such as student-led correspondence and business games shows how structured interaction, clear objectives, and creative participation enhance cognitive motivation. Web-Quests, both short-term and long-term, encourage research, critical thinking, and knowledge synthesis, while role-playing and virtual scenarios further support engagement and experiential learning. Independent work using Internet resources-search engines, databases, e-libraries, email, and virtual conferences-fosters digital literacy and self-directed learning. The study concludes that integrating ICT in higher education enriches learning experiences, increases student involvement, and creates conditions for sustainable development of cognitive orientation. These strategies provide opportunities for students to acquire, analyze, and apply knowledge effectively, preparing them for professional challenges in the digital age and fostering an innovative academic culture.

Key words: digitalization, cognitive orientation, students, university, ICT.

Розвиток інформаційного суспільства та швидка діджиталізація освіти зробили інтеграцію інформаційно-комунікаційних техно-

логій (ІКТ) важливим компонентом сучасної вищої освіти. Це дослідження окреслює шляхи покращення пізнавальної спрямованості студентів шляхом використання ІКТ в освітньому середовищі університету. Дослідження показують, що ІКТ значною мірою сприяють формуванню мотивації, критичного мислення та навичок самостійного навчання студентів. Активні навчальні інструменти, такі як веб-квести та інтернет-моделі навчання, демонструють свою ефективність у стимулюванні пізнавальної спрямованості та залученості студентів.

У дослідженні виявлено невирішені проблеми поєднання традиційних педагогічних методів з цифровими інструментами, а також роль викладачів у створенні цифрового освітнього середовища, що сприяє активізації пізнавальної спрямованості студентів університету. Практичні приклади інтеграції ІКТ включають студентське листування, ділові ігри, віртуальні зустрічі, наставництво, веб-квести, змагання та спільні ігри. Детальний аналіз таких моделей, як студентське листування та ділові ігри, показує, як структурована взаємодія, чіткі цілі та творча участь підвищують пізнавальну спрямованість студентів університету. Веб-квести, як короткострокові, так і довгострокові, заохочують дослідження, критичне мислення та синтез знань, тоді як рольові ігри та віртуальні сценарії додатково підтримують залученість та експериментальне навчання. Самостійна робота з використанням інтернет-ресурсів – пошукових систем, баз даних, електронних бібліотек, електронної пошти та віртуальних конференцій – сприяє цифровій грамотності та самостійному навчанню. Доведено, що інтеграція ІКТ у вищу освіту збагачує навчальний досвід, підвищує залученість студентів та створює умови для сталого розвитку пізнавальної спрямованості. Ці стратегії надають студентам можливості ефективно здобувати, аналізувати та застосовувати знання, готуючи їх до професійних викликів у цифрову епоху та сприяючи інноваційній академічній культурі.

Ключові слова: діджиталізація, когнітивна орієнтація, студенти, університет, ІКТ.

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Problem Statement. The development of the information society stimulates the widespread use of information and communication technologies (ICT) in education, which is determined by numerous factors. Firstly, the introduction of ICT into modern education significantly accelerates the transmission of knowledge and the accumulated technological and social experience of humanity-not only from generation to generation but also from one individual to another. Secondly, modern ICT, by improving the quality of learning, enables individuals to adapt more effectively and rapidly to their environment as well as to ongoing social changes. This provides every person with the

opportunity to acquire the necessary knowledge both in the present and in the post-industrial society. Moreover, the effective implementation of these technologies in education is an important factor in creating a new educational system that meets the requirements of societal progress and the modernization of the traditional educational model.

Thus, today, university lecturers have the opportunity to enrich the process of mastering learning material by integrating didactic methods with information and communication technologies.

Analysis of recent research and publications. Research shows that information and communication

technologies (ICT) actively influence students' cognitive orientation (E. Ackermann [1]; M. Aub [2]). Studies emphasize the potential of digital technologies as active creators of knowledge (L. Miller [7]; V. Dusen [8]). Electronic learning environments promote student autonomy and motivation (J. Harris [6]; B. Dodge [5]). The management aspects of implementing innovations in education and the development of interactive competence through computer networks are also highlighted (T. Burns [3]; D. Chun [4]).

Active learning tools, such as Web-Quests and models of Internet-based learning, demonstrate the effectiveness of ICT in shaping cognitive orientation (B. Dodge [5]; J. Harris [6]). The importance of a balanced integration of technology and pedagogy is emphasized, while network-based learning is shown to develop critical thinking and cognitive activity among students (M. Warschauer [9]).

Thus, contemporary research confirms that the integration of ICT is an effective means of activating students' cognitive orientation in the context of digitalization.

Identification of previously unresolved parts of the overall problem. The activation of university students' cognitive orientation in the context of digitalization is one of the key areas of modern higher education modernization, requiring further research and improvement. Particular attention should be paid to the integration of information and communication technologies (ICT) into the learning process to develop students' cognitive motivation, critical thinking, and independence. Insufficiently explored are the forms of conducting classes that ensure an effective combination of traditional didactic approaches with digital learning tools, as well as the role of instructors in creating a digital educational environment oriented toward active cognitive engagement. Further scientific exploration of these aspects will contribute to improving the quality of education, developing the digital competence of future specialists, and fostering an innovative culture in higher education.

The purpose of the article is to explore ways of enhancing university students' cognitive orientation through the integration of ICT in the digitalized educational environment.

Presentation of the main material. In the context of the outlined problem, it is appropriate to provide examples of ICT integration into the educational process of higher education institutions. Such examples may include the following forms of organizing learning activities: correspondence between individual students; planetary classes, where students are members of a group and also interact with other groups (these classes should have shared characteristics such as age, professional level, language of communication, interests, etc., as well as additional common features like culture, languages, countries, continents); business games; virtual meetings; mentoring; Web-Quests; competitions; collaborative games, and others.

A more detailed consideration can be given to correspondence between individual students. This model of using telecommunications networks can serve as a source of motivation. The main factors for success are the pedagogical design of activities, strict supervision by the instructor, and the creative nature of the correspondence.

The stages of implementing this model include: defining clear objectives for the activity; publishing one's project or finding similar ones offered by other instructors; coordinating with one or several instructors who share similar goals; determining the discussion topic based on the objectives; explaining to students the importance of preliminary work on the content; specifying the duration of the planned correspondence; providing access to a computer lab with appropriate equipment; and planning the results and, if necessary, the next stage of the activity.

Attention should also be paid to another form of organizing learning activities, namely business games. For example, there is a student-led business game project called «Doctor Science». In this activity, one of the students conducts virtual meetings with other students while remaining hidden behind the mask of this character. Other students can ask questions, and to answer them, the leader must read extensively and understand the topic under discussion. Moreover, it has long been proven that the best way to learn something is to begin teaching it.

There are also teacher-led business games. For instance, in Quebec, Canada, instructors organized a virtual village from the late 19th century as part of a foreign language course. Each instructor took on different roles – blacksmith, doctor, postman, etc. To interact with the various characters, students must have a clear understanding of life during that era, which requires extensive reading and preparation.

Virtual meetings allow students to address questions to any well-known personality, for example, a Nobel Prize laureate. Along with the meeting announcement, a dossier is provided containing instructions on how to participate, a brief biography of the invited person, a publication of one of their works (such as an article), subscription details for newsletters, and information on how the meeting will take place.

Mentoring is another model frequently used in France. For example, there are servers where students can receive guidance on completing homework – not by being given ready-made answers, but by being led toward problem-solving methods.

An interesting form of conducting lessons is Web-Quests, which can be prepared by the instructor or found online. A Web-Quest is a specially organized type of research activity in which students search for information on the web using specified addresses. They are designed to make more efficient use of students' time, to engage the acquired information for practical purposes, and to develop skills in critical thinking, analysis, synthesis, and evaluation of information.

To ensure maximum effectiveness, a Web-Quest (a specially organized web page) should include the following components:

1. Introduction, which describes the timeframe for completion and presents the initial situation;
2. Engaging task, which is realistically achievable;
3. Set of online resources necessary to complete the task. Some (but not all) resources may be copied to the Web-Quest site to simplify access for students. These resources should include links to web pages, expert email addresses or thematic chats, books, or other materials available from the instructor or the library. Accurate addresses help students avoid wasting time while completing tasks;
4. Description of the work process, divided into stages with specific deadlines;
5. Instructions for processing the acquired information, including guiding questions, concept maps, and cause-and-effect diagrams;
6. Conclusion, which reminds students what they have learned through the task, suggests directions for further independent study, or explains how to transfer the acquired experience to other areas.

Web-Quests can be short-term or long-term. Short-term projects aim to acquire knowledge and integrate it into the student's existing knowledge system. These projects may last from one to three sessions. Long-term Web-Quests are designed to expand and deepen understanding. Upon completing a long-term Web-Quest, students should be able to conduct in-depth analysis, transform knowledge, and master the material well enough to create related tasks. Long-term projects may last from one week to a month (or, at most, two months).

Additional motivation can be created by allowing students to assume roles (e.g., «scientist», «journalist», «detective», «architect») and act accordingly. For example, if the instructor assigns the role of «United Nations Secretary», that character might send a message to another participant acting as «President of a country» regarding the need for peaceful conflict resolution. A Web-Quest may belong to a single subject or be interdisciplinary.

Web-Quests may take various forms. The most popular include:

1. Creating a database on a specific problem, with each section prepared by students;
2. Creating a micro-environment where students can navigate via hyperlinks simulating physical space;
3. Writing an interactive story, where students choose the direction of the story at 2–3 decision points, similar to the classic «choose your path» storytelling method;
4. Creating an analytical document on a complex problem, asking students to agree or disagree with the author's viewpoint;
5. Online interviews with virtual characters, where students develop both questions and answers after

thoroughly studying the character. This could be a political figure, literary character, renowned scientist, or even an alien.

This approach is best implemented with small groups, which receive a collective grade evaluated by peers and the instructor.

Another engaging method is competitions, as the competitive element provides additional motivation. For example, a literature quiz can be organized among students from different universities, even in different countries. Questions can be answered online over a week, and evaluations consider knowledge, clarity of presentation, and formatting.

Collective games are also a valuable form of learning. For instance, online servers allow up to 100 participants to interact simultaneously, enabling simulation of various scenarios, such as conducting a lesson where each participant has a specific role.

Independent work with ICT aims to develop students' skills for self-directed learning in line with modular-block organization of content. This process is focused on mastering learning material assigned for independent study according to curricula and work programs, as well as preparing for classroom sessions. To achieve this, Internet resources can be used:

- For information search – web browsers, databases, information retrieval and reference systems, automated library systems, and electronic journals;
- For online communication – email, synchronous and asynchronous teleconferences;
- For creating thematic web pages and Web-Quests.

Independent student work can be diversified with innovative forms and methods depending on the digital literacy of teachers and students, the available ICT infrastructure at the university, and students' readiness to use online resources as learning tools.

Recent years have seen independent work enriched by numerous pedagogical innovations. For example, students can be asked to write reviews of websites on a given topic. Two modes are possible:

1. Students review a site specified by the instructor (with a pre-provided URL);
2. Students independently search for sites on a similar topic and write reviews.

A special type of laboratory work is a «virtual rally», consisting of instructor-designed web pages with links to various online resources and questions to be answered by visiting the specified sites. Students must visit as many sites as possible and correctly answer all questions within a one-hour timeframe. At the end, students submit their report to the instructor via email or in written form. The best works are published on the course support site.

Conclusions. This review reflects only certain aspects and directions of using ICT in organizing students' educational and cognitive activities. However, within the defined goal – researching ways to

activate students' cognitive engagement through ICT integration into a digitalized learning environment – it is important not only to analyze existing forms of ICT-based teaching but also to demonstrate their practical implementation.

In our study, examples of lessons using various digital tools are presented, which, in our view, contribute to the development of students' sustained cognitive motivation, critical thinking, and learning autonomy. These examples confirm the effectiveness of combining traditional teaching methods with innovative ICT, which, in turn, increases student engagement in the educational process and creates conditions for the development of cognitive activity in the context of digitalization.

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