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INTERACTIVITY AND CONTEXT: INTEGRATION OF LEARNING, MAKING AND EXHIBITING IN MODERN CULTURAL AND ARTISTIC CENTERS

The article examines the integration of learning, making, and exhibiting in modern cultural and artistic centers, facing the conceptual problem of gradually losing their material and practical aspect at the onset of digitalization. It proposes a system of spatial and social qualities that support participatory interaction, creative production, and public engagement, enhancing the holistic concept of a cultural ecosystem. Architecture is considered as its underlying framework, directing its comprehensive realization as an inhabited environment, maintaining fluid transitions and avoiding functional fragmentation. In this new formula digital technologies need to be reimaged to support its interactivity and highlight its connection to regional cultural context.

Keywords: cultural ecosystem; creative spaces; learning environment; exhibition areas; public engagement; innovative information technologies.

Statement of the problem. Artistic and cultural centers constitute a most significant typology of public built environment as sites of education, creativity, and exchange of culture. Beyond mere display of art, their social and educational role has the purpose of enabling continuous interaction between artists, students, and the general public. The buildings that typify such centers – workshops, educational studios, exhibition spaces, and open creative areas – together create a site of great richness where culture is both created and consumed.

In contemporary practice, however, a perceivable gap has emerged between education, creative production, and exhibition. Workshop and learning spaces are often pushed to secondary locations, as exhibitions occupy dominant but discrete volumes. The result is a disjointed experience in which the process of making is hidden and severed from its educational and social ties. Visitors are shown the finished work but are not addressed by the process that creates it. This intellectual

and geographical division diminishes the center's potential to be an organism of learning and creativity.

The growth of digital culture and dominance of virtual interfaces have further exacerbated this condition, shifting much artistic knowledge and experience to the digital sphere. Architects and cultural designers are then faced with repositioning the physical cultural center as not just a passive receptacle for artistic display, but as an engaged and integrative site offering direct participation and interaction. Solving this conceptual problem of new adjustment of cultural facilities to their physical, material side, and subsequent readjustment of digital tools to it, poses a relevant task for research.

Therefore, the central problem that this research is concerned with is devising an architectural system that unites learning, making, and exhibiting into a singular encompassing spatial and functional entity. This unification should establish an uninterrupted process of knowledge exchange, creative activity, and public presentation – a "cultural ecosystem" capable of reflecting the interactive and dynamic nature of contemporary art and culture.

Analysis of recent research and publications. A number of theoretical and practical studies on cultural and artistic centers describe essential aspects that form the foundation of the present research:

- The transformation of cultural institutions from spaces of passive display to participatory environments of co-creation and learning has been analyzed by N. Simon [1], D. Anderson [2], F. Matarasso [3], and J. Falk & L. Dierking [4], who emphasize the importance of interaction and shared authorship in redefining cultural experiences.

- The growing significance of hands-on creativity and “learning-through-making” has been studied by B. Pepler, E. Halverson, and Y. Kafai [5], as well as by K. Sheridan and K. Halverson [6]. Their findings highlight the educational, social, and intergenerational value of spaces that merge learning and artistic production.

- Architectural frameworks exploring the connection between education, creation, and exhibition were examined by M. Albert and W. Brisibe [7] and through the Research-by-Design methodology presented by O. Devisch et al. [8], both of which underline architecture’s role in shaping creative interaction.

- Theories of placemaking and human-centered design developed by J. Gehl [9] and the Project for Public Spaces [10] stress accessibility, visibility, and openness as core qualities of interactive cultural spaces.

- The philosophical and psychological understanding of “place” as an intersection of space, behavior, and meaning was articulated by D. Canter [11], E. Relph [12], and Y.-F. Tuan [13]; their ideas inform how architecture fosters cultural identity and engagement.

- The link between intangible heritage and contemporary creativity has been highlighted by UNESCO [14], M. Alivizatou [15], and L. Smith [16], who demonstrate that participatory practices in traditional crafts enable cultural continuity and reinterpretation.

- Recent architectural typology studies by A. Borysenko [17] and S. Smolenska [18] provide analytical tools for comparing spatial systems that integrate public, creative, and educational functions within cultural buildings.

These studies collectively demonstrate a growing focus on participatory, experiential, and inclusive qualities of cultural architecture. Yet, there remains a conceptual gap between social theories of participation and the architectural typologies that enable such dynamics – a gap this research seeks to address through the idea of a cultural ecosystem.

Formulation of the goal of the article. Cultural and artistic centers serve as multifunctional environments where education, creativity, and public engagement converge. They hold an essential role in shaping cultural dialogue and supporting artistic development through spaces such as workshops, studios, and exhibition halls. Contemporary trends in participatory and community-based art have redefined the role of these centers, emphasizing collaboration, inclusivity, and continuous interaction. Consequently, architectural design must explore new spatial strategies that enhance this interconnectedness and reflect the evolving nature of cultural experience.

The main goal of the research presented in this article is to identify an architectural system that ensures the integration of learning, making, and exhibiting in modern cultural and artistic centers. Such a system can be useful for describing and differentiating the spatial and social environments of these centers according to their capacity to support active learning, artistic production, and public participation.

The following research tasks were set for this goal:

1) Identify the key spatial and social characteristics that define the interaction between educational, creative, and exhibition spaces in cultural centers.

2) Analyze case studies that exemplify integrated cultural ecosystems to observe the particularities of integration of learning, making and exhibiting in modern cultural and artistic centers.

Presentation of the main material

In the modern era, cultural and artistic centers have come to represent far more than simple buildings for displaying artworks or hosting events. They are increasingly viewed as dynamic environments that connect education, creativity, and public engagement. Unlike traditional cultural institutions that separated the process of creation from presentation, contemporary centers seek to merge these experiences into a single, fluid system. This change responds to the growing societal demand for

participatory culture and collective learning where visitors become collaborators, and architecture acts as the physical framework that enables this exchange.

The notion of a cultural ecosystem provides a conceptual foundation for this transformation (Fig. 1). A cultural ecosystem functions as a continuous cycle where learning, making, and exhibiting nourish each other within one spatial and social structure. Rather than isolating the artist, student, and visitor into distinct zones, this approach encourages overlap and collaboration. The architecture of such spaces becomes porous – boundaries between classrooms, studios, and galleries are intentionally softened to promote movement and visibility. Through this openness, architecture turns into a tool of connection and communication, shaping both the creative process and the audience's perception.

Recent theoretical and applied research supports the spatial and educational value of integrating these functions. For instance, in “Fusing Interactive Learning and Display Spaces in a Heritage Museum: The Role of Architecture”, W. Brisibe (2021) demonstrates how museum design can dissolve the barriers between pedagogy and exhibition [7]. Similarly, the article by O. Devisch et al. [8] proposes a design-based methodology for testing and refining educational and creative relationships directly through architectural practice [8]. Both studies underline the central role of spatial design in shaping contemporary cultural interaction.

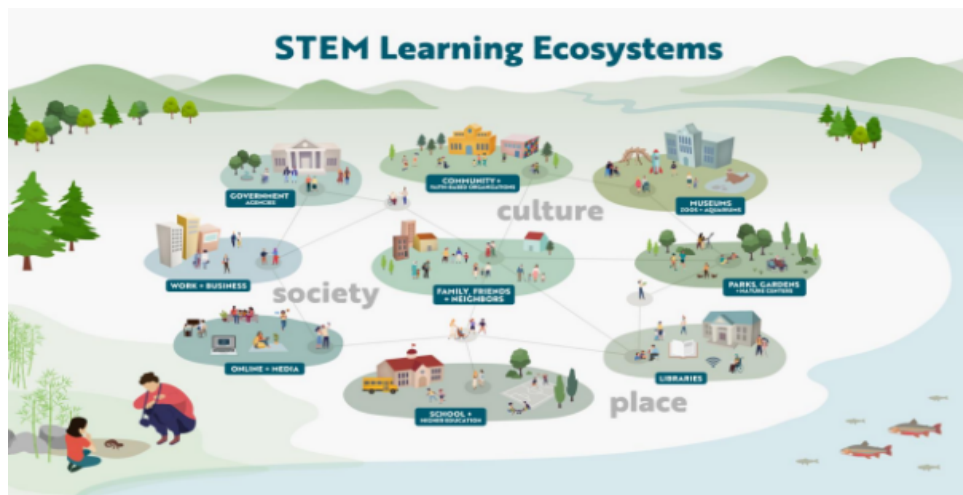


Figure 1. Conceptual diagram illustrating a learning ecosystem, showing the interaction between culture, society, and place [19]

From an architectural standpoint, the rise of the maker culture reinforces this evolution. Sheridan et al. [6] and Halverson [5] show that spaces combining learning and making, such as makerspaces and creative laboratories, stimulate intergenerational collaboration, enhance cognitive development, and strengthen the social fabric of communities. In these environments, education becomes an active, sensory experience, and artistic production becomes a shared cultural act. The process of creation itself acquires exhibition value, turning the workspace into a

living gallery.

Parallel to this, studies on urban and cultural design emphasize that spatial openness and human-centered design are key to making such integration possible. Jan Gehl [9] and the Project for Public Spaces [10] note that accessibility, visibility, and flexibility are decisive factors in determining how people interact with space.

The theoretical roots of this idea are deeply connected to environmental psychology and the phenomenology of place. D. Canter [11] introduced a model linking physical environment, human behavior, and meaning, a triadic relationship that defines how space shapes experience. E. Relph [12] and Y.-F. Tuan [13] similarly describe “place” as the synthesis of material form and lived engagement. Within a cultural ecosystem, this triad translates into architecture that not only accommodates activities but also embodies cultural identity through interaction and memory. The perception of space becomes inseparable from the creative process occurring within it.

Another dimension of this integration is the connection to intangible cultural heritage, which brings local identity and tradition into dialogue with contemporary art. UNESCO [14] and M. Alivizatou [15] highlight that when traditional crafts such as weaving, pottery, or calligraphy are transformed into participatory practices within cultural centers, they move from static display to dynamic education. The act of making becomes both a means of cultural transmission and a creative experiment, where heritage is continuously reinterpreted by new generations. Architecture, in this context, acts as a mediator between tradition and innovation, bridging memory and modernity.

In spatial terms, an effective cultural ecosystem relies on a coherent balance between its core components. Educational areas must spark curiosity and social exchange, creative workshops should encourage experimentation and collaboration, and exhibition zones need to support reflection and public interaction. When these spaces are designed to overlap visually and functionally, the transition between learning, making, and showcasing becomes seamless. This integration transforms the cultural center into a unified architectural environment where the visitor evolves from a passive observer into an active participant in the creative process, strengthening both personal engagement and the cultural value of the institution.

It can be argued that the architectural integration of learning, making, and exhibiting must extend beyond functional adjacency to encompass the emotional and sensory journey experienced by users within cultural spaces. A cultural center should be conceived as an environment where movement, light, acoustics, and materiality collectively guide curiosity, collaboration, and celebration throughout the spatial sequence. When the architectural narrative stimulates discovery at the entrance, supports interaction and experimentation within creative zones, and highlights

achievements in exhibition areas, cultural participation becomes a lived experience rather than a passive encounter. Accordingly, successful cultural ecosystems require spaces that are not only functionally efficient but also memorable, engaging, and capable of continuously inspiring new cultural production.

Practical examples of such integration can already be observed in the Arab world. The Jameel Arts Centre in Dubai (Fig. 2) embodies a contemporary model of cultural interaction, where the boundaries between learning and exhibition are intentionally minimized to support continuous public involvement. The architectural organization of the building promotes knowledge exchange by merging open workshops, research rooms, library spaces, and flexible gallery halls [20].



Figure 2. The Jameel Arts Centre in Dubai [20]

Instead of isolating artistic creation from the audience, the center allows making and showcasing to coexist simultaneously. Courtyards, transparent edges, and public terraces ensure constant visual dialogue between creators and visitors. Community-oriented programs, including research initiatives and participatory educational activities, strengthen the center's position as a platform for both cultural production and collective learning. Through this spatial and social openness, Jameel Arts Centre demonstrates how architecture can operate as a living cultural ecosystem that nurtures creativity and stimulates interaction between cultural actors (Fig. 3).

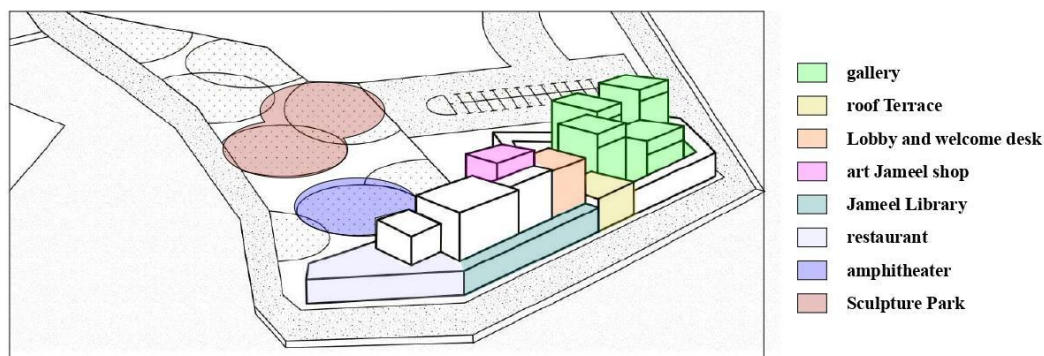


Figure 3. Functional scheme of Jameel Arts Centre (by C. Mansour)

Likewise, the King Abdulaziz Center for World Culture in Dhahran, Saudi Arabia known as Ithra (Fig. 4), designed by Snøhetta in 2018, represents one of the most comprehensive manifestations of a cultural ecosystem [21].



Figure 4. The King Abdulaziz Center for World Culture [21]

Ithra represents one of the most advanced manifestations of integrated cultural architecture. The project brings together diverse functions such as a library, museum, creative studios, science and innovation labs, theaters, and children's discovery zones within a single fluid structure. This spatial continuity reflects the institutional mission of linking knowledge, cultural heritage, and creative development, transforming cultural consumption into cultural co-production. Circulation in the building is designed to expose visitors to all stages of the cultural cycle: learning, experimentation, and exhibition (Fig.5).

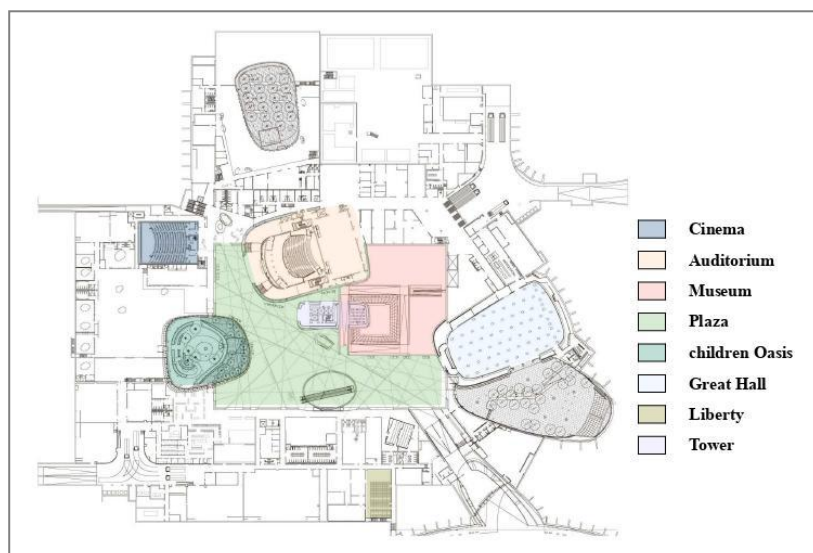


Figure 5. Functional scheme of the King Abdulaziz Center for World Culture (by C. Mansour)

Through visual transparency and accessible spatial design, visitors observe artistic processes while engaging in educational programs, which turns the building

into a community laboratory of social innovation. Ithra's architectural strategy thus reinforces the concept that cultural identity is not merely preserved, but actively produced through participation and interaction.

The Sheikh Jaber Al-Ahmad Cultural Centre (Fig. 6) introduces a regional example where performance culture and educational engagement are deeply interconnected.



Figure 6. The Sheikh Jaber Al-Ahmad Cultural Centre [22]

The complex includes multiple theaters, rehearsal rooms, music studios, public gardens, and educational facilities that support continuous interaction between artists and audiences (Fig. 7). While performances celebrate artistic accomplishment, the adjacent learning environments enable the public to experience the earlier phases of artistic creation from rehearsals to training activities. The architecture of the center emphasizes symbolic identity through its crystalline roof structure while ensuring human-centered accessibility in its interior organization. The public realm surrounding the complex also acts as an extension of the cultural program, hosting open performances and community events. This integration between artistic production, talent development, and public encounter positions the center as a significant contributor to the evolution of cultural spaces in the world towards more inclusive and participatory environments.

Generally, it can be observed how the architectural spatial solution in analyzed cases provides a comprehensive framework for bringing disparate components of initial whole back together. The physical and visual connections between corresponding vessels of functions, their visually perceived and semantically informed unity as well as programmatic interactivity of these parts serve to reinforce the holistic nature of presented cultural process. The interactivity and contextuality of resulting cultural ecosystem are its two important aspects. Interactivity facilitates participation, engaging visitors into the very cultural process observed. Meanwhile,

demonstrable adherence of its architecture and program to regional context visually affirms the value and authenticity of corresponding cultural process to the viewer.

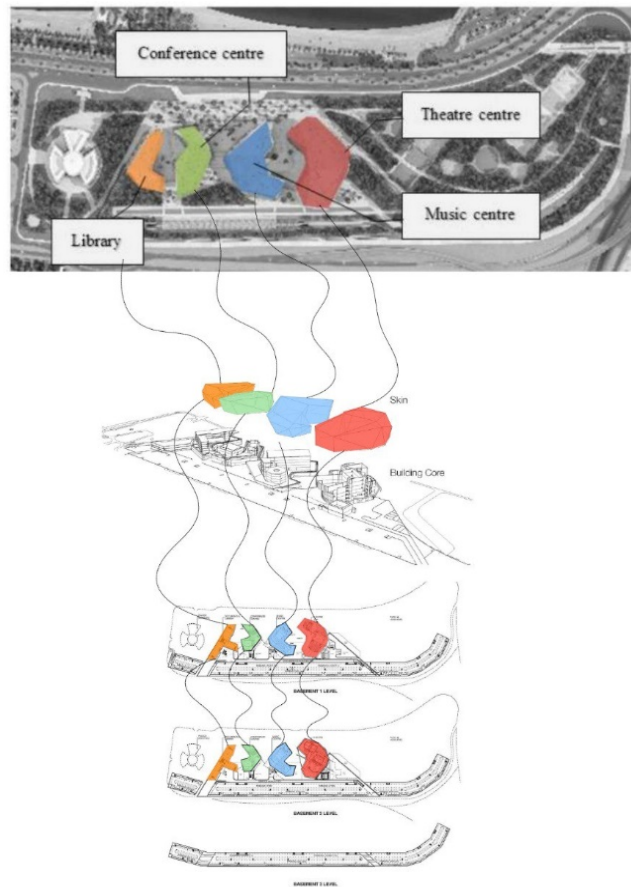


Figure 7. Functional scheme of the Sheikh Jaber Al-Ahmad Cultural Centre
(by C. Mansour)

In this new formula the application of digital technologies should be considered along their integrating aspect, highlighting the connections in the systemic whole, its interactivity and contextuality through means of innovative information tools, like media architecture and augmented reality. Of particular interest are their role in supporting and informing the material component of creative spaces. There, augmented reality tools can be used for audience engagement by providing simulation and role-playing “learning through game” experience to accompany physical activity without replacing it, meanwhile the smart control of lighting and sound ambience can contribute to fostering a positive creative atmosphere. Augmented reality is of particular interest in this regard, as it requires material component, merging with it and building digital layer to supplement it. The general information aspect of innovative information technologies also remains of use for education and exhibition goals, providing additional semantic content to physical spaces, helping in long distance advertisement and general dissemination of

knowledge.

Ultimately, the integration of learning, making, and exhibiting within a single architectural framework does not merely improve spatial efficiency – it redefines the social mission of architecture. Cultural and artistic centers designed in this way become laboratories of shared experience, places where education, creation, and communication coexist. They transform architecture into a cultural process – a living medium that nurtures creativity, preserves identity, and connects people through the language of space.

Conclusions

Research demonstrates a significant transformation in modern cultural and artistic centers, which are evolving from passive exhibition venues into dynamic environments that integrate learning, making, and exhibiting as interconnected functions. By adopting this cultural ecosystem approach, architecture becomes a catalyst for visibility, participation, and shared creativity, enabling continuous interaction between artists, learners, and the public. The study emphasizes the importance of maintaining spatial balance between educational spaces, creative production areas, and exhibition/public zones to ensure fluid transitions and avoid functional fragmentation. These qualities are what define the modern iteration of this building type that can be described as integrated cultural center.

Practical examples from the Arab region, including the Jameel Arts Centre in Dubai, the King Abdulaziz Center for World Culture in Dhahran, and the Sheikh Jaber Al-Ahmad Cultural Centre in Kuwait, demonstrate the feasibility and benefits of this integrated model through flexible layouts, transparency, and strong community engagement. Looking ahead, future research should focus on developing measurable indicators for evaluating cultural ecosystems, exploring digital tools that enhance participation, establishing adaptable typological models, and assessing the long-term social and educational impacts of participatory architectural design.

Ultimately, integrated cultural centers redefine the purpose of architecture transforming the built environment into a living framework where culture is created, experienced, and shared collectively.

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ІНТЕРАКТИВНІСТЬ ТА КОНТЕКСТ: ІНТЕГРАЦІЯ НАВЧАННЯ, ТВОРЕННЯ ТА ЕКСПОНУВАННЯ У СУЧАСНИХ КУЛЬТУРНИХ ТА МИСТЕЦЬКИХ ЦЕНТРАХ

В сучасному культурному контексті роль культурно-мистецьких центрів значно вийшла за межі традиційних функцій демонстрації мистецьких творів. Такі заклади нині розглядаються як середовище, що активно сприяє навчанню, творчому виробництву та публічній взаємодії, які повинні здійснюватися як взаємопов'язані процеси. Проте у багатьох наявних будівлях ці складові залишаються просторово відокремленими, що обмежує можливості для співпраці й послаблює зв'язок між творцями та відвідувачами. Цей ефект посилюється швидким розвитком цифрових засобів надання інформації, що створюють помітний дисбаланс в бік експозиційних функцій. Розділення освітніх студій, творчих майстерень і виставкових просторів призводить до пасивного сприйняття культури, коли глядач бачить лише завершений результат, не розуміючи знань і досвіду, що стоять за процесом його створення. Тому дослідження спрямоване на визначення архітектурних стратегій, здатних трансформувати культурні центри в інтегровані екосистеми, де навчання, творчість і експонування співіснують у єдиній узгодженій просторовій моделі.

У статті представлено поняття «культурна екосистема», яке визначається як архітектурно-соціальна структура, що забезпечує неперервність між освітньою діяльністю, мистецьким виробництвом і публічною презентацією. Теоретичну базу дослідження складають просторові підходи до проєктування, орієнтовані на досвід перебування в середовищі, зокрема концепції ідентичності місця, візуальної проникності, соціальної відкритості та партисипативної взаємодії. Ці принципи є ключовими для формування середовищ, у яких відвідувачі можуть не тільки споглядати мистецтво, а й

ставати співтворцями культурного процесу. Методи дослідження включають порівняльний аналіз трьох знакових прикладів із країн Близького Сходу: Центру мистецтв Джаміль у Дубаї, Центру світової культури короля Абдулазіза (Ітра) у Дахрані та Культурного центру шейха Джабера Аль-Ахмада в Кувейті. Ці об'єкти обрано завдяки їх новаторським рішенням щодо поєднання мистецьких функцій, інтеграції публічного простору та зв'язку сучасної творчості з культурною спадщиною.

Отримані результати засвідчують, що просторова інтеграція посилює освітню та соціальну цінність культурних центрів і сприяє культурній сталості. Відкриті майстерні, прозорі межі між творчими й публічними зонами та гнучкі планувальні рішення забезпечують прямий доступ відвідувачів до творчого процесу, перетворюючи центр на простір спільного культуротворення. Таким чином архітектура виступає активним посередником між мистецькими інноваціями та участю громади. Новітні інформаційні технології в цій новій формулі мають працювати на інтегруючий ефект, посилюючи залученість фізичних видів активності. Відповідно, подальші дослідження можуть бути спрямовані на розроблення типологічних моделей для різних культурних контекстів, а також на поглиблене вивчення ролі цифрових технологій як доповнення до фізичної взаємодії.

Ключові слова: культурна екосистема; креативні простори; навчальне середовище; виставкові зони; залучення публіки; інноваційні інформаційні технології.