

**THEORY AND METHODOLOGY OF VOCATIONAL EDUCATION**

UDC 377:374:711.4

DOI <https://doi.org/10.5281/zenodo.19219062>

**The Role of Industrial Site Revitalization in the Creation of Multifunctional Creative Spaces for Non-Formal Education**

**Myroslav Zhaldak,**

architect, project manager, independent researcher,

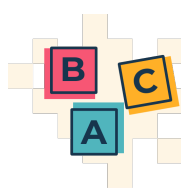
<https://orcid.org/0009-0002-8584-6648>

**Accepted: 12.09.2025 | Published: 30.09.2025**

***Abstract.** The purpose of this article is to determine the role and substantiate the potential of industrial site revitalization in the context of creating multifunctional creative spaces that can be used to provide non-formal education for children and adults. To achieve this objective, general scientific and specialized research methods were applied, including analysis and synthesis of scholarly sources, comparative analysis, and the generalization and systematization of approaches to understanding non-formal education and revitalization.*

*The findings demonstrate that non-formal education constitutes a dynamic component of the contemporary educational system, ensuring flexibility of learning, responsiveness to individual needs, and alignment with labor market demands. The development of non-formal education is shown to be closely associated with the transformation of the educational environment and the search for new learning spaces. It is substantiated that the revitalization of industrial facilities represents an effective instrument for shaping such spaces due to their substantial floor areas, spatial openness, and potential for functional zoning.*

*The study confirms that the preservation of elements of industrial architecture*



*contributes to a favorable psychological environment that stimulates cognitive engagement and creativity. The main models of reorganizing industrial facilities through revitalization to meet the needs of non-formal education are proposed, including open-format creative spaces, specialized educational hubs, cultural and educational centers, innovation parks, and inclusive learning environments.*

*The **conclusions** emphasize that the revitalization of industrial facilities creates the preconditions for establishing an effective educational environment that organically integrates educational, cultural, and social functions. Provided that the principles of comprehensiveness, adaptability, and heritage preservation are observed, such facilities can become platforms for implementing innovative forms of non-formal education. **Prospects for further** research in this area are associated with an in-depth analysis of pedagogical facilitation technologies in open creative environments, as well as the development of criteria for assessing the quality of educational services delivered within revitalized hubs.*

**Keywords:** *non-formal education, revitalization, industrial facilities, creative space, educational environment, educational hub.*

## **Роль ревіталізації промислових об'єктів у створенні багатofункціональних креативних просторів для неформальної освіти**

**Жалдак Мирослав Ігорович,**

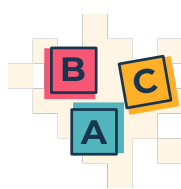
архітектор, керівник проєктів, independent researcher,

<https://orcid.org/0009-0002-8584-6648>

**Анотація:** *Метою статті є визначення ролі та обґрунтування потенціалу ревіталізації промислових об'єктів у контексті створення багатofункціональних креативних просторів, що можуть використовуватися для здійснення неформальної освіти дітей і дорослих. Для*



досягнення поставленої мети застосовано загальнонаукові та спеціальні **методи** дослідження, зокрема аналіз і синтез наукових джерел, порівняльний аналіз, узагальнення та систематизація підходів до розуміння неформальної освіти та ревіталізації.. У **результаті** дослідження встановлено, що неформальна освіта є динамічною частиною сучасної освітньої системи, яка забезпечує гнучкість навчання, орієнтацію на потреби особистості та відповідність вимогам ринку праці. Визначено, що розвиток неформальної освіти тісно пов'язаний із реформуванням освітнього середовища та пошуком нового простору для навчання. Обґрунтовано, що ревіталізація промислових об'єктів є ефективним інструментом формування такого простору завдяки їх значним площам, відкритості та можливості функціонального зонування. Доведено, що збереження елементів індустріальної архітектури створює сприятливе психологічне середовище, яке стимулює пізнавальну активність і творчість. Запропоновано основні варіанти реорганізації промислових об'єктів у процесі ревіталізації для потреб неформальної освіти, серед яких виокремлено креативні простори відкритого типу, спеціалізовані освітні хаби, культурно-освітні центри, інноваційні парки та інклюзивні освітні простори. У **висновках** обґрунтовано, що ревіталізація промислових об'єктів створює передумови для формування ефективного освітнього середовища, яке органічно поєднує освітні, культурні та соціальні функції. Встановлено, що за умови дотримання принципів комплексності, адаптивності та збереження історичної спадщини такі об'єкти можуть стати платформами для реалізації інноваційних форм неформальної освіти. **Перспективи** подальших досліджень у цьому напрямі пов'язуються з поглибленим аналізом педагогічних технологій фасилітації навчання в умовах відкритого креативного простору, а також із розробленням критеріїв оцінювання якості освітніх послуг, що надаються на базі ревіталізованих хабів.



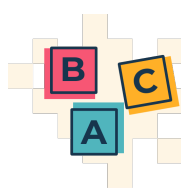
*Ключові слова:* неформальна освіта, ревіталізація, промислові об'єкти, креативний простір, освітнє середовище, освітній хаб.

**Introduction.** Contemporary European integration processes necessitate a reassessment of the role of vocational education as a critical factor in the formation of human capital capable of ensuring the sustainable development of communities and regions. In the context of the transition toward a knowledge economy, creative industries, and innovative forms of employment, the establishment of a flexible educational environment oriented toward nonformal education acquires particular relevance.

Ukraine is characterized by a substantial number of industrial facilities that have lost their original productive function and currently exist in a state of decline, generating an unfavorable urban environment while simultaneously constraining the socioeconomic development potential of local communities. This situation necessitates the identification of effective approaches to their revitalization, taking into account the educational, cultural, and social needs of society.

To date, the revitalization of industrial heritage has been examined predominantly within architectural-urban planning, economic, and cultural studies frameworks, while its pedagogical potential remains insufficiently theorized. At the same time, the transformation of industrial facilities into multifunctional creative spaces opens new opportunities for the development of innovative educational formats, particularly in the fields of nonformal and vocational education, which correlates with the principles of the lifelong learning concept. Such spaces may function as integrative platforms for interaction among education, business, and the civic sector, providing conditions for practice-oriented learning, the development of soft skills, the enhancement of professional mobility, and the formation of a contemporary professional culture among future specialists.

The problem outlined above is rooted in the contradiction between the



growing societal demand for open, flexible, and creative educational environments and the insufficient theoretical and methodological elaboration of the pedagogical foundations for utilizing revitalized industrial facilities as potential platforms for nonformal education. On the one hand, there is a clear demand for the modernization of vocational education infrastructure and the expansion of its functional scope beyond traditional educational institutions; on the other hand, comprehensive scholarly frameworks aimed at the organic integration of architectural solutions with pedagogical concepts for organizing the educational process in creative environments remain absent. The relevance of this problem is further reinforced by the need to rehabilitate and develop territories that have experienced economic decline or physical destruction and require the formation of new centers of social activity and professional advancement for the population.

**Literature Review.** A substantial portion of contemporary scholarly work focuses on the architectural-urban planning, socioeconomic, and cultural studies dimensions of this phenomenon, while the educational potential of revitalized spaces is only beginning to receive adequate academic grounding.

In the studies of Ukrainian and international scholars, the revitalization of industrial heritage is examined as an effective instrument of sustainable urban development. Thus, M. Yashchenko and M. Popovych substantiate the significance of post-industrial territory renewal as a resource for urban innovation, demonstrating its capacity to combine economic, social, and environmental effects [1]. T. Bodnar and M. Yasynskyi provide evidence of the potential of local urban initiatives in creating new public spaces on the basis of former industrial zones in Lviv [2]. V. Patsiuk and co-authors develop practical recommendations for the revitalization of industrial heritage in Kryvyi Rih, underscoring the particular relevance of this issue for Ukrainian society [3].

A significant contribution to understanding the spatial and social dimensions of revitalization is made by X. Zhang and Y. Ren, who apply the theory of space



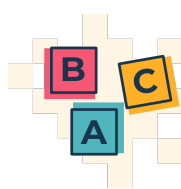
production to analyze the transformation of industrial facilities into new urban environments, placing particular emphasis on the role of diverse forms of social activity in shaping their functional content [4]. Similar ideas are advanced by Q. Yang, who examines industrial heritage as a product of social construction within the context of cultural governance [5]. L. Chen argues that the conversion of industrial zones into cultural and creative spaces promotes the development of local communities and stimulates the cultural life of cities [6].

The rational reuse of industrial facilities and its implications for sustainable development are examined in detail by P. Alavi and co-authors, who underscore the ecological and economic rationale of such approaches [7]. M. Dehghan Pour Farasha and co-authors approach revitalization through the lens of place branding, demonstrating that industrial heritage may serve as a significant factor in the formation of a distinctive urban identity [8]. H. Yue and co-authors, in turn, focus on the application of digital technologies and open data in revitalization processes, arguing that these tools can enhance public trust in governance decisions [9].

In an applied context, J. Xia, S. Wang, and A. Cheng propose models for evaluating the effectiveness of industrial territory transformation [10], while J. Cao analyzes concrete cases of industrial facility reuse as cultural institutions [11]. J. Kozina, D. Bole, and J. Tiran draw attention to the preservation of industrial city values and the potential for their incorporation within the framework of the creative city concept [12].

A distinct line of inquiry addresses the socioecological challenges of revitalization. Yu. Ivashko, O. Ivashko, and A. Dmytrenko emphasize the importance of accounting for environmental risks and the social context in urban renewal processes [13]. This provides grounds for approaching revitalization not merely from a technical standpoint, as a process of construction and reconstruction, but also within a broader framework, as a significant form of social activity.

Alongside the studies outlined above, the body of literature includes a



considerable range of scholarly works addressing nonformal education and the formation of innovative educational environments. In particular, N. Sulaieva analyzes models of nonformal arts education and highlights the role of creative space as an environment for the professional development of young researchers [14]. O. Kupina identifies the organizational forms of nonformal education in higher education institutions, emphasizing the importance of incorporating professionally structured learning activities into the extracurricular engagement of students [15].

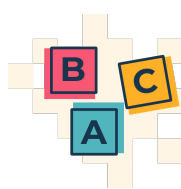
**Identification of Previously Unresolved Aspects of the Problem.** Despite the substantial body of existing research, certain gaps in scholarly knowledge remain. In the majority of studies, revitalization is examined predominantly from a technical perspective, within the frameworks of architecture, urban planning, or economics, while its educational potential, particularly in the context of nonformal education, remains insufficiently explored. Furthermore, the number of studies that comprehensively integrate creative space theory with pedagogical approaches to organizing learning outside formal institutions is limited. Insufficient attention has also been given to analyzing the multifunctionality of revitalized facilities as environments that simultaneously fulfill cultural, social, and educational functions.

The contribution of this article to addressing these problems lies in substantiating the educational potential of industrial facility revitalization through their transformation into multifunctional creative spaces for nonformal education, as well as in integrating revitalization approaches with pedagogical concepts for organizing learning beyond the boundaries of formal institutions.

**Statement of the Article's Objectives.** The purpose of this article is to determine the role and substantiate the potential of revitalizing industrial facilities in the context of creating multifunctional creative spaces that can be used to provide non-formal education for children and adults.

To achieve this aim, the following objectives are to be addressed:

- 1) to clarify the concept of non-formal education and examine the specific



features of its regulation within the legislative framework of Ukraine;

2) to analyze the essence and key characteristics of revitalization, with particular attention to the revitalization of industrial facilities;

3) to substantiate the potential of revitalizing industrial facilities as a significant resource for ensuring adequate spatial infrastructure for non-formal education;

4) to propose specific models for the reorganization and adaptation of industrial premises to support non-formal educational activities of various orientations.

**Research Findings.** In the contemporary educational landscape, non-formal education is regarded as a significant component of lifelong learning that complements formal and informal education by ensuring flexibility, variability, and practical orientation of the educational process. According to the provisions of the Law of Ukraine “On Education,” non-formal education is defined as education typically acquired through educational programs that does not involve the award of state-recognized educational qualifications, although it may result in the conferment of professional qualifications [16]. Thus, it has a pronounced practical focus and is oriented toward the development of competencies necessary for professional activity, personal self-realization, and social integration.

The regulatory framework governing non-formal education in Ukraine is established by a number of legislative acts, including the Law of Ukraine “On Education,” the Law of Ukraine “On Higher Education” [17], and the Law of Ukraine “On Professional Education” [18]. These documents enshrine the principle of recognition of the outcomes of non-formal and informal learning, which corresponds to European trends in the development of lifelong education.

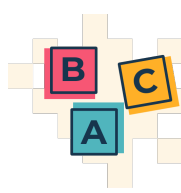
In scholarly research, non-formal education is considered an environment that ensures the individualization of educational trajectories and promotes the development of soft skills. In particular, S. Kubrak, G. Rizak, and I. Kyrchata focus



on transformations of the educational process driven by distance learning, which has become one of the catalysts for the rapid expansion of non-formal education. The researchers emphasize that online learning formats, despite their advantages, are accompanied by several psychological and pedagogical challenges, including social isolation, decreased motivation, and limited interpersonal interaction [19]. Building on these findings, it is important to underscore that under such conditions, alternative educational environments gain particular significance, as they are intended to compensate for existing limitations by creating favorable conditions for communication, collaboration, and active learner engagement. The approaches proposed by the authors, including the use of interactive platforms, the development of self-organization skills, and the provision of psychological support, reflect the core principles of non-formal education, which is grounded in flexibility, accessibility, and responsiveness to individual educational needs [19].

The further development of the concept of individualized learning is reflected in the study by N. Kurasova, K. Stepanova, and G. Rizak, in which the authors substantiate the potential of augmented and virtual reality technologies for supporting individualized educational trajectories [20, p. 154]. The researchers argue that the integration of these technologies enhances learner motivation, stimulates cognitive activity, and contributes to the formation of a multidimensional educational environment. At the same time, they emphasize that digital tools cannot fully replace traditional forms of instruction but should function as complementary instruments that expand the possibilities of the educational process [20]. In this context, non-formal education emerges as an optimal environment for testing innovative technologies, as it is characterized by a lower degree of regulation and provides broader opportunities for the implementation of novel forms and methods of instruction.

Within the conceptualization of non-formal education, it should be noted that it represents a dynamic component of the Ukrainian educational system, combining



intensive interpersonal interaction among learners with innovative instructional approaches. Its specificity lies in the creation of flexible educational opportunities oriented toward individual needs and the demands of the contemporary labor market. The development of non-formal education is closely linked to the transformation of the modern educational environment, particularly to the search for new learning spaces that ensure the integration of interactive technologies, active interpersonal engagement, and access to advanced information and communication resources.

In this context, particular relevance is attached to the potential of revitalization as one of the instruments for shaping such educational environments. Revitalization is interpreted as a comprehensive process of rethinking, restoring, and functionally upgrading abandoned or inefficiently used areas and facilities in order to integrate them into the contemporary socio-economic and cultural environment. Of particular importance is the revitalization of industrial facilities, which involves not only the physical reconstruction of buildings but also the transformation of their functional purpose in accordance with current societal needs [4].

According to M. Yashchenko and M. Popovych, the revitalization of post-industrial areas is aimed at developing new functional scenarios for spatial use that ensure sustainable and effective urban development [1, p. 182]. T. Bodnar and M. Yasinskyi emphasize that adaptability is a key characteristic of revitalization, understood as the capacity of facilities to change their functional purpose without losing their historical and cultural value. This approach involves preserving authentic elements of industrial architecture that shape the unique identity of the space and integrating them into new functional structures [2].

Within the framework of the theory of the production of space applied by S. Zhang and Y. Ren, revitalization is interpreted as a process of social construction of space in which physical renewal is accompanied by changes in patterns of perception and use. Accordingly, a revitalized industrial facility ceases to function solely as a material environment and is transformed into a platform for new forms

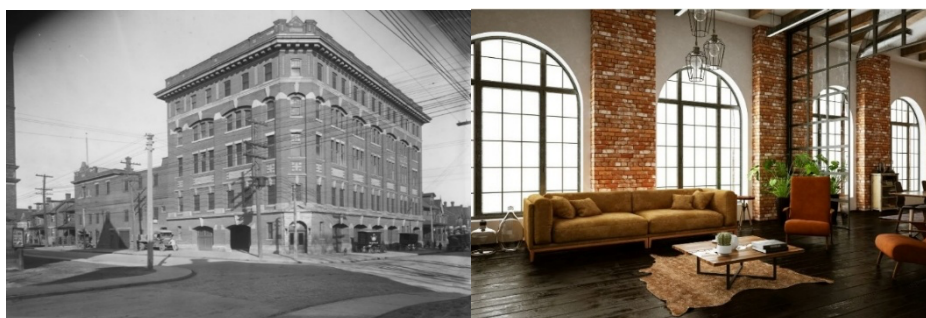
of social activity, including educational and cultural initiatives [4, p. 3441]. This position is fully consistent with the views of Yu. Ivashko, O. Ivashko, and A. Dmytrenko, who emphasize the need to consider social and environmental factors in the revitalization process to ensure its long-term positive impact on the community [13, p. 49].

A defining characteristic of industrial facility revitalization is the provision of multifunctionality, achieved through the integration of diverse activities within a single space. Scholars emphasize that contemporary approaches to revitalization involve the active use of digital technologies, open data, and smart city tools, which contributes to more effective management of such facilities and greater public engagement in their transformation processes. As a result, revitalized spaces become less defined as architectural objects and more as functional environments for the collaborative activity of specific communities, stimulating innovation and civic engagement [9].

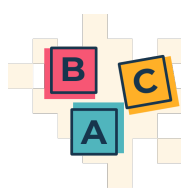
An instructive example illustrating the nature of industrial facility revitalization is the transformation of the Ideal Bread Company Factory building in Toronto. Constructed in 1919 as an industrial bakery, the building fell into prolonged decline until 2007, when it was reconstructed and adapted into contemporary residential lofts [21] (Fig. 1).

### **Figure 1**

*Conversion of a Factory into Residential Lofts (Toronto, Canada): Ideal Bread Company Factory*



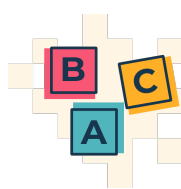
Source: [21]



The initial condition of the facility was characterized by significant physical deterioration, degradation of façades, and the decline of interior spaces, which is typical of many post-industrial sites. During the revitalization process, the principal elements of industrial architecture were preserved, including brick walls and large window openings that provide natural lighting and shape the distinctive aesthetic character of the space. The premises were transformed into open, flexible interiors suitable for both residential use and creative activities, demonstrating the potential for multifunctional adaptation of such facilities [21].

The revitalization of industrial facilities in contemporary conditions represents one of the most promising resources for the formation of a new educational environment, including the development of nonformal education. This is determined by both the spatial characteristics of such facilities and their social and cultural potential, which enables the integration of educational, creative, and communicative activities within a unified multifunctional environment. Post-industrial territories possess considerable potential for transformation into open, flexible, and inclusive spaces capable of meeting the demands of contemporary education.

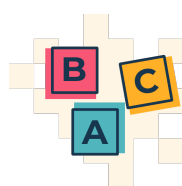
The rationale for utilizing revitalized industrial facilities as prospective educational spaces rests on their defining characteristics. These facilities offer large-scale interior areas that readily accommodate a variety of functional zones, ranging from classrooms and workshops to coworking spaces and exhibition areas. The openness and polyfunctionality of such premises facilitate the implementation of contemporary pedagogical approaches, including project-based learning. It is also noteworthy that the preservation of industrial architectural elements creates a distinctive psychological atmosphere conducive to focused engagement and elevated levels of cognitive activity. Revitalized facilities thus combine material, aesthetic, and symbolic dimensions that are essential to the formation of an effective nonformal learning environment.



The experience of Ukraine corroborates the viability of this approach. As M. Yashchenko and M. Popovych note, a number of successful industrial revitalization projects have already been implemented across the country, functioning as multifunctional creative spaces. A particularly illustrative example is the transformation of the Darnytsia Silk Combine into the Artzavod Platform (Kyiv), which today operates as a prominent cultural and educational hub. The space integrates concert venues, art locations, coworking areas, and educational initiatives, creating conditions for the delivery of training sessions, workshops, lectures, and other forms of nonformal learning. This multifunctionality enables engagement with diverse target audiences and ensures the interdisciplinary character of educational activity [1, p. 181]. Another example is the revitalization of a linen weaving factory into the Artcenter Closer (Kyiv), which functions as a cultural and artistic space with a pronounced educational component. The presence of artist residencies, music platforms, theater venues, and media spaces creates conditions for the implementation of diverse cultural and recreational activities. The former Halychsklo enterprise in Lviv was transformed into the contemporary residential cluster !Fest Republic, which realizes the concept of a “city within a city” and integrates residential development with a kindergarten, office premises, and multifunctional sociocultural spaces [1, p. 181].

The revitalization of industrial premises in the context of nonformal education development involves purposeful and deliberate functional reorganization aligned with educational needs of varying orientations. The effectiveness of such premises depends substantially on the selected model of modification, which must account for the specifics of educational activity and the intended target audience. In the context of nonformal education development, flexible, modular, and multifunctional solutions that enable the combination of diverse learning formats within a single space are of particular importance.

In the process of revitalizing industrial facilities, several principal models of



reorganization for nonformal education purposes may be identified (Table 1).

**Table 1**

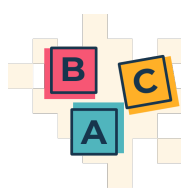
*Main Options for the Reorganization of Industrial Facilities within the Revitalization Process to Support Non-Formal Education*

<b>Reorganization Option</b>	<b>Spatial Characteristics</b>	<b>Core Functions</b>	<b>Educational Focus</b>
Open-format creative space	Open, transformed areas with minimal zoning	Coworking, lectures, workshops, networking	General education
Specialized educational hub	Availability of laboratories, technical equipment, and themed classrooms	Practical instruction, training sessions, professional preparation	Professional, technical, IT, design
Cultural and educational center	Integration of exhibition, theatrical, and learning spaces	Master classes, art projects, cultural events	Arts, humanities
Innovation park	Combination of educational, research, and business spaces	Project-based activities, entrepreneurship, team-based development of innovative projects	Entrepreneurial, innovation-oriented
Inclusive learning space	Adapted infrastructure and barrier-free environment	Educational programs for diverse population groups	Socially oriented, inclusive

Source: developed by the author

One of the most prioritized models is the creation of an open creative space that combines the functions of learning, communication, and creative activity. Such spaces incorporate zoning into coworking areas, lecture halls, workshops, and exhibition areas, enabling the implementation of diverse educational programs. Another model involves the formation of specialized educational hubs oriented toward specific fields of knowledge, including information technology, design, arts, or technical disciplines. In this case, the premises are equipped with the corresponding facilities and laboratories, promoting the development of practical skills and professional competencies.

A distinct category is represented by cultural and educational centers that

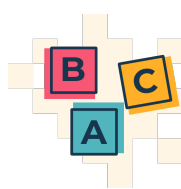


combine instructional functions with artistic and social activities. Such spaces promote the integration of formal and non-formal education through the provision of master classes, exhibitions, and other educational and outreach initiatives. Another promising model involves the transformation of industrial facilities into innovation parks and startup centers, where learning is implemented through engagement in project-based activities, entrepreneurship, and cross-sector collaboration. An equally significant approach is the establishment of inclusive educational spaces adapted to the needs of diverse user groups, consistent with contemporary principles of accessibility and equity in education.

The diversity of approaches to reorganizing industrial premises within the revitalization process enables their effective adaptation to non-formal educational needs of various orientations. The flexibility of spatial solutions, the capacity for the integrated combination of multiple functions, and a user-centered focus collectively ensure the creation of an innovative educational environment that responds to contemporary challenges and fosters the development of competencies required in today's dynamic society.

**Conclusions.** The findings of this study confirm that the revitalization of industrial facilities represents a highly effective strategy, provided that the principles of comprehensiveness, adaptability, historical heritage preservation, and deliberate orientation toward multifunctional space use are consistently observed. The revitalization process encompasses not only the physical reconstruction of abandoned structures but also their profound functional transformation, enabling former industrial zones to become centers of active educational, social, and cultural activity. This creates fundamental preconditions for utilizing revitalized facilities as innovative platforms, particularly in the field of nonformal education, thereby offering new opportunities for the implementation of lifelong learning concepts.

Analysis of practical experience demonstrates that the reinterpretation of industrial architecture generates a distinctive environment that, owing to its spatial

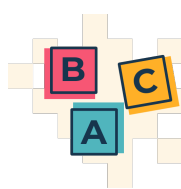


flexibility, functional diversity, and social openness, stimulates cognitive engagement and creative inquiry. This approach fosters the emergence of integrated educational ecosystems in which the acquisition of knowledge extends beyond the boundaries of traditional formal institutions and assumes a dynamic, practice-oriented, and personalized character. Within the scope of this study, the principal models of reorganizing such facilities were identified and systematized; priority was assigned to the establishment of open-type creative spaces, specialized educational hubs, cultural and educational centers, innovation parks, and inclusive learning environments. Accordingly, revitalized industrial facilities emerge as an effective instrument for modernizing the educational landscape, which substantiates their considerable potential in the context of developing contemporary nonformal education.

Directions for further scholarly inquiry in this area are envisioned in the detailed investigation of pedagogical facilitation technologies applicable to open creative learning environments, as well as in the development of quality assessment criteria for educational services delivered at revitalized hub facilities. Particular attention should be directed toward examining the psychological dimensions of industrial design's influence on the cognitive motivation of diverse age groups, along with an analysis of the mechanisms by which such autonomous educational sites may be integrated into a national system for the recognition of nonformal learning outcomes.

## References

1. Ященко М. І., Попович М. М. Ревіталізації постпромислових територій. *Інноваційні технології в будівництві: збірник матеріалів Міжнародної науково-технічної конференції* (м. Вінниця, 20-22 листопада 2024 р.). Вінниця: ВНТУ, 2024. С. 179–182. URL: <https://press.vntu.edu.ua/index.php/vntu/catalog/view/869/1514/2811-1> (дата



звернення: 19.07.2025).

2. Боднар Т., Ясінський М. Можливості ревіталізації промислових територій міст на прикладі вулиці Замкової у місті Львові. *Вісник Національного університету «Львівська політехніка»*. Серія: «Архітектура». 2023. № 2 (10). DOI: <https://doi.org/10.23939/sa2023.02.001>

3. Patsiuk V., Kazakov V. L., Skorupskas R., Ostapchuk I. O. Revitalization of the industrial heritage: guidelines for Kryvyi Rih. *IOP Conference Series Earth and Environmental Science*. 2022. Vol. 1049. Article 012082. DOI: <https://doi.org/10.1088/1755-1315/1049/1/012082>

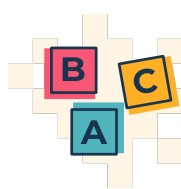
4. Zhang X., Ren Y. Revitalization of urban industrial heritage from a perspective of spatial production theory: the case study of “Old market” project. *Journal of Asian Architecture and Building Engineering*. 2025. Vol. 24. № 5. P. 3440–3456. DOI: <https://doi.org/10.1080/13467581.2024.2396618>

5. Yang Q. The Social Production of Industrial Heritage Spaces in the Background of Cultural Governance: A Comparative Study Based on Cases from Taipei and Hong Kong. *Buildings*. 2023. Vol. 13. № 7. DOI: <https://doi.org/10.3390/buildings13071579>

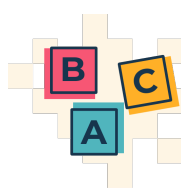
6. Chen L. Industrial legacy and urban regeneration: transformation of industrial zones into cultural and creative spaces. *Journal of Urban Planning and Development*. 2025. Vol. 151. № 2. DOI: <https://doi.org/10.1061/JUPDDM.UPENG-5510>

7. Alavi P., Sobouti H., Shahbazi M. Adaptive re-use of industrial heritage and its role in achieving local sustainability. *International Journal of Building Pathology and Adaptation*. 2024. Vol. 42. № 6. P. 1223–1249. DOI: <https://doi.org/10.1108/IJBPA-09-2021-0118>

8. Dehghan Pour Farashah M., Guimarães P. P. C., Cheraghi E., Ghomeshi M. Industrial Heritage Regeneration Through Place Branding. *Heritage*. 2025. Vol. 8. № 10. DOI: <https://doi.org/10.3390/heritage8100437>



9. Yue H., Wei Y., Yuan H., Li H. Revitalizing urban industrial heritage: Enhancing public trust in government through smart city development and open big data analysis. *Cities*. 2024. Vol. 156. DOI: <https://doi.org/10.1016/j.cities.2024.105538>
10. Xia J., Wang S., Cheng A. Industrial heritage and urban renewal: a quantitative study and optimization strategies for Chengdu East Suburb Memory. *Frontiers in Environmental Science*. 2025. Vol. 13. DOI: <https://doi.org/10.3389/fenvs.2025.1537211>
11. Cao J. Reuse of Industrial Heritage in Urban Regeneration – A Case Study of Hirosaki Brick Art Museum, Shiroy Koibito Park and Xiaohe Park. *Current Urban Studies*. 2025. Vol. 13. № 4. P. 376–386. DOI:10.4236/cus.2025.134018
12. Kozina J., Bole D., Tiran J. Forgotten values of industrial city still alive: what can the creative city learn from its industrial counterpart? *City, Culture and Society*. 2021. Vol. 25. DOI: <https://doi.org/10.1016/j.ccs.2021.100395>
13. Ivashko Yu., Ivashko O., Dmytrenko A. Revitalization of urban areas in the light of social and environmental problems. *Просторовий розвиток*. 2023. Вип. 5. С. 33–50. DOI: <https://doi.org/10.32347/2786-7269.2023.5.33-50>
14. Sulaieva N. Non-formal arts education in the training of young researchers: innovative approaches, models, and perspectives. *Ukrainian Professional Education*. 2025. № 18. С. 82–93. DOI: <https://doi.org/10.33989/2519-8254.2025.18.347714>
15. Купіна О. Організаційні форми неформальної освіти здобувачів вищої освіти в Україні. *Освіта. Інноватика. Практика*. 2023. Т. 11. № 7. С. 43–51. DOI: <https://doi.org/10.31110/2616-650X-vol11i7-006>
16. Про освіту: Закон України № 2145-VIII від 5 вересня 2017 року. Редакція від 01.01.2026. URL: <https://zakon.rada.gov.ua/laws/show/2145-19#Text> (дата звернення: 19.07.2025).
17. Про вищу освіту: Закон України № 1556-VII від 1 липня 2014 року.



URL: <https://zakon.rada.gov.ua/laws/show/1556-18#Text> (дата звернення: 19.07.2025).

18. Про професійну освіту: Закон України № № 4574-IX від 21 серпня 2025 року. Редакція від 01.03.2026. URL: <https://zakon.rada.gov.ua/laws/show/4574-20#n1084> (дата звернення: 19.07.2025).

19. Кубрак С. В., Різак Г. В., Кирчата І. М. Психолого-педагогічні аспекти підтримки здобувачів вищої освіти під час дистанційного навчання в Україні. *Педагогічна Академія: наукові записки*. 2025. № 18. DOI: <https://doi.org/10.5281/zenodo.15484371>

20. Kurasova N., Stepanova K., Rizak G. The role of virtual reality in creating individualized educational trajectories for students. *Horizons of Innovation: Conference on Multidisciplinary Trends in Science 2024*. Futurity Research Publishing, 2024. P. 154–159. URL: <https://futurity-publishing.com/horizons-of-innovation-conference-on-multidisciplinary-trends-in-sci> (дата звернення: 19.07.2025).

21. Ideal Bread Company Factory – Now Edwardian Classical Lofts. *Toronto Journey 416*: website. URL: <https://www.torontojourney416.com/ideal-bread-company-factory/> (дата звернення: 19.07.2025).