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### Key Challenges Facing Legal Education in Today's Digital Learning Environment: A Neuropedagogical Perspective

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**Abstract:** *The article examines the use of information technologies in teaching legal disciplines from a neuropedagogical perspective. It analyses how the digital learning environment affects the way students learn complex legal norms. The role of IT tools in economic, tax and legal practice is also considered, with particular attention to the stimulation of sensory systems and the activation of long-term memory. Working with legal reference systems (LigaZakon, Ukincom systems) is viewed as a factor that promotes neuroplasticity. It also supports the formation of stable neural connections during professional training. The article further presents the results of experimental work conducted among students enrolled in a Law degree programme. The test results show that the methodology takes into account individual neurophysiological differences in the way information is perceived. Its implementation has improved the quality of knowledge, enhanced legal culture, and strengthened the analytical skills of future specialists.*

**Keywords:** *digitalisation; professional education; legal culture; legal awareness; neuropedagogy; cognitive activity; neuroplasticity.*

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## 1. Introduction

The social development of Ukrainian society in the 21<sup>st</sup> century cannot be understood without a well-established legal culture. In particular, the legal education of the younger generation within today's digital learning environment is essential, which explains the considerable scientific interest in the topic.

The professional dimension of legal education occupies a central position among various legal issues. The pedagogical community is actively implementing new approaches to enhance legal training. Moreover, legal education remains a key priority for any state. Strengthening legal culture at different levels is closely linked to the development of civil society and the consolidation of a rule-of-law state.

Negative social phenomena often arise under the influence of multiple factors. These include legal nihilism and citizens' lack of basic knowledge about their rights and responsibilities. It is important to emphasise that this does not concern specialised legal knowledge or complex legislative details. Rather, it relates to the fundamental rules of conduct that every individual requires in everyday life.

The demand for legal education, which plays a crucial role in socio-humanitarian development, stems from several key objectives: 1) fostering legal culture, 2) enhancing legal literacy, and 3) developing practical legal skills. At the same time, legal competence is formed through education that integrates the knowledge, skills, values, and experience essential for everyday life.

This area has attracted significant interest from scholars. Xue (2024) stresses the importance of legal education for socio-humanitarian development. Chen and Policarpio (2024) clarify practical strategies of fostering legal literacy and culture. Bazayev (2024) notes that a key characteristic of legal awareness is its retrospective focus, centring on past social interactions rather than future-oriented or goal-driven thinking. Young and Billings (2020) suggest that shifts in legal consciousness can be analysed from multiple perspectives and provide examples illustrating how to prevent negative outcomes. Görnitz (2025) adds that legal consciousness originates from specific brain activity and is fundamentally subjective. Its "extent" depends on the individual as the carrier of such consciousness.

The neuropedagogical approach is particularly important in this field. It allows legal education to be seen as more than the transfer of normative knowledge. It involves a complex interaction between the digital environment and the student's cognitive architecture. This is crucial because legal awareness results from specific neurophysiological activity. Neuropedagogy helps optimise the acquisition of legal tools through understanding the mechanisms of memory, attention and emotional intelligence. In the context of digital transformation, this approach helps to reduce cognitive overload and supports the formation of stable neural connections. These connections are essential for moving from theoretical knowledge of the law to practical legal behaviour.

This article aims to explore the role of legal education in legal socialisation. It views legal awareness as an essential component of legal reality through a neuropedagogical approach. Emphasis is placed on the use of advanced technologies in legal education and their impact on the neuropsychological processes involved in information perception.

## 2. Literature Review

The swift advancement of digital technologies is changing every aspect of society, particularly how individuals involve themselves in civic and political life (Shin et al., 2024). The internet has a profound impact on the development and education of today's youth. In this regard, theoretical training should provide a basis for individual practice when exploring the global network. This approach further emphasises the key position of pedagogy in universities. As innovation creates both opportunities and risks, these factors must be carefully considered when implementing educational programmes. Civil-law culture is therefore essential for preparing students to navigate a digitally transforming society.

For research purposes, specific forms of Internet communication can be examined, particularly those used in digital learning environments to foster students' civil-law culture. Contemporary socialisation is characterised by an abundance of information sources, which may result in information overload. In addition, many young Internet users demonstrate fragmented thinking. Excessive use of digital resources may also have negative effects, including memory impairment, sometimes described as digital dementia.

From a neuropedagogical standpoint, one can interpret fragmented thinking as an evolutionary strategy the brain uses to cope with information overload. It results in discontinuous perception and weakens the functions of the prefrontal cortex, which is responsible for deep analysis and systematic thinking. As a result, serious barriers arise in the study of law, since legal education requires sustained concentration on complex texts and the ability to construct multi-level logical structures (Rakhmetova et al., 2024).

Digital teaching and learning materials are currently the most widely used electronic resources in higher education. These tools enable students to consult key learning resources and support the development of their civil-law understanding online. This highlights the value of teaching students how to locate accurate and relevant information. It is also important to develop students' civil-law culture as a crucial part of legal training (Kortleven et al., 2024).

The Internet allows students to access information through a) scholarly works, including textbooks, monographs, and encyclopaedias; b) online legal consultations; and c) government websites containing legal information.

It is also essential to recognise the value of information and foster respect for the rights and responsibilities involved in its protection, sharing, recognition, and use. Positive outcomes are achievable only if educational institutions incorporate practical student experience with the legal institution of personal data. However, online resources and electronic signatures, sometimes used to verify identity, may not always be fully effective.

Still, Internet technologies provide extensive opportunities. They enable civil society to consolidate into collaborative groups, for example, to discuss political issues that affect human rights and interests. Therefore, higher education institutions must prepare future specialists with knowledge and skills in using electronic services, such as interacting with government authorities or participating in online voting.

Not all digital platforms are beneficial. Some websites and groups actively promote ideas and theories prohibited by law. These include recruitment into extremist organisations or the promotion of drug abuse and other harmful practices.

The Internet influences the legal development of young people and acts as a regulatory tool for human consciousness and reasoning. Engaging youth in addressing socially important issues through social networks can foster their personal development and civic awareness.

The use of multimedia technologies is a widespread practice in the teaching of law. These technologies include texts, images, videos, and other materials that enrich the informational and legal education of youth. Civic development is further promoted through virtual attendance at theatrical performances, viewing historically significant films, and interacting with notable figures (Shutt et al., 2023).

Multimedia technologies are therefore essential for effective legal training. They allow for faster and more effective development of students' legal culture in digital environments. These technologies also instil moral values and respect for law and order, as they convey information persuasively and enhance the educational process. As a result, students are encouraged to engage consciously with information and develop a stronger interest in relevant issues (Honchar et al., 2021).

The effectiveness of multimedia within a neuropedagogical framework stems from its ability to engage multiple sensory pathways at once. The emotional impact of visual material triggers the amygdala, which helps students more quickly integrate legal values into their long-term memory (Huangal-Schneider et al., 2023).

Currently, the educational process in professional education operates within certain restrictive frameworks. This is largely due to the labour market's urgent need for highly qualified personnel specialising in digital technologies.

The shift from traditional to industrial forms of development has increased competition across the educational system (Śliwa et al., 2021). Practical teaching allows educators to integrate information technologies and their applications while still appreciating the importance of traditional methods. In legal education, digital tools are essential for equipping students to become well-rounded individuals who can actively engage in society, including its social and political spheres.

As education undergoes digital shifts, the established frameworks for training legal professionals must be re-evaluated. These models primarily focus on rote learning and are insufficient for developing legally aware, critically thinking, and socially responsible individuals (Bazeliuk, 2021). A key theoretical challenge lies in the gap between current legal education programmes and the demands of a digital society, alongside the crucial ethical considerations inherent in the digital space. The active use of social networks, artificial intelligence platforms, chatbots, and freely available online chats increases the need for digital legal competence. It involves securing personal rights on the internet, and following digital ethical standards.

At the same time, one must enhance the effectiveness of legal education in a digital environment. Legal instruction should evolve into a pragmatic, person-centred system that shapes active legal perspectives and prepares students to operate within digital environments.

Besides substantive law, students investigate specific technical areas, including legal techniques. This discipline focuses on the practical application of theoretical norms and the correct documentation of legal provisions most frequently used in legislation. One such discipline is Legal Reference Systems. Its main objective is to examine the general theoretical foundations underlying the construction and functioning of legal reference systems. It also aims to develop practical skills and competencies for using information complexes, systems, and technologies to solve applied problems in professional activities.

As part of the curriculum, the teacher delivers lectures that form the foundation of students' theoretical training. The goal is to convey the essence of the discipline along with the practical features of working with legal reference systems. The lectures introduce key theoretical concepts and explain the general characteristics of legal problems. Students discuss various scientific concepts, ranging from the growth potential of legal database systems to the advancement of decision-support tools (Davydova et al., 2023).

Lecturers also show how information technologies are applied in economic, tax, and legal contexts. Students study five topics under a classical teaching model, exploring the role, functions, and key features of legal reference systems. *LigaZakon* and *Ukincom* are the most frequently used systems (Zaiarnyi & Illarionova, 2025).

Despite the capabilities of these systems, students often hesitate to use legal reference systems during classes, research projects, and practical work. This problem has deep neurophysiological roots. Working with professional databases requires substantial cognitive activity to filter out irrelevant information and construct complex search queries. Given the dopamine-driven reliance on simple social media interfaces, the student's brain subconsciously avoids energy-intensive operations. Therefore, the teaching process should incorporate neuropedagogical techniques, such as microlearning and gamification. These methods reward the brain for completing challenging legal tasks and gradually strengthen a stable professional neural framework..

### **3. Developing Legal Culture with Neuropedagogical Approaches in Digital Education**

Digital transformation in higher education requires rethinking the teaching of civil and legal culture using neuropedagogical approaches. Neuropedagogy is understood as an interdisciplinary area combining cognitive neurobiology and pedagogy. A key challenge today is the adaptation of

the human brain to ultra-fast information flows, which often leads to the emergence of fragmented thinking. Rather than being a basic psychological shift, this phenomenon is interpreted by neuropedagogy as neural defence against cognitive overload. For future lawyers, however, the fragmentation of perception becomes a critical barrier. A systematic understanding of law demands high functional activity of the prefrontal cortex. This region of the brain is responsible for deep analysis, impulse control, and the construction of multi-level logical structures.

Recent studies indicate that digital resources can both inhibit and enhance neural plasticity (Huanga-Schneider et al., 2023; Rakhmetova et al., 2024). Virtual simulators and multimedia systems exert a significant neuropedagogical influence by engaging multiple senses simultaneously. Both hemispheres of the brain are activated, and the amygdala is stimulated by the synchronised engagement of visual, auditory, and emotional channels. This process contributes to the “emotional imprinting” of legal values in long-term memory. At the same time, working with complex professional systems often induces subconscious cognitive resistance in students (Zaiarnyi & Illarionova, 2025). This effect can be explained by the neurobiological principle of energy conservation. The brain becomes accustomed to dopamine stimulation from simple social network interfaces. As a result, it tends to avoid the energy-intensive operations required to filter legal information.

To overcome this barrier, pedagogy should employ mechanisms that stimulate the dopaminergic reward system, such as gamification and microlearning. These strategies gradually restructure the student's neural architecture. They transform the complex process of searching for legal information into a series of achievable cognitive acts, reinforced by a sense of intellectual achievement.

Thus, the neuropedagogical approach informs the student and supports the formation of a biologically stable professional position. This position enables them to resist digital arbitrariness and manipulation in the global network.

#### **4. Research Methodology**

The study followed an explanatory sequential design, a form of mixed-methods research. The research included two stages. The first stage was quantitative and involved a large-scale survey designed to identify general trends. The second stage was qualitative and included a quasi-experiment and interviews that allowed a deeper analysis of the causes and provided verification of the proposed methodology.

Full randomisation was not possible because the academic schedule in higher education institutions is fixed. For this reason, a quasi-experimental design with non-equivalent groups was used. This approach allowed the curriculum to be tested in a natural academic environment.

The total sample consisted of 128 second-to fourth- year Law students from Taras Shevchenko National University of Kyiv and the National Aviation University. The sample was formed using a multistage procedure.

The first stage was a screening stage ( $n = 128$ ). At this stage, all participants completed a survey that assessed their baseline level of information literacy and helped identify typical barriers. The second stage involved focus group selection ( $n = 24$ ). At this stage, two groups were formed: the experimental group (EG,  $n = 12$ ) and the control group (CG,  $n = 12$ ). Students in the EG demonstrated a low or moderate level of use of legal information systems, according to the results of the pre-test.

The qualitative verification stage ( $n = 20$ ) involved in-depth interviews with participants from the previous stages. The interviews helped clarify motivational factors related to the use of legal information systems.

An additional criterion for forming the experimental and control groups was the neuropedagogical profile of the students. This profile was determined through testing of the dominant cognitive style (field dependence or field independence). Considering this factor made it possible to account for differences in how students process legal information in a digital

environment. It also helped ensure the neurophysiological comparability of the groups, which improved the reliability of the results.

To ensure the validity of the results, several complementary data collection tools were used.

*1. Diagnostic questionnaire (Google Forms)*

The questionnaire included 23 closed and semi-closed questions. Its reliability was confirmed through Cronbach's alpha ( $\alpha > 0.7$ ). The instrument focused on two components of information literacy: the cognitive component (knowledge of legal information systems) and the praxeological component (practical search skills).

*2. Structured observation*

Structured observation was conducted over a four-week period. Special observation cards were used to record students' behaviour while completing independent tasks. The main indicator was the frequency of access to official legal databases compared with open web resources.

*3. Semi-structured interviews*

Interviews were conducted using a pre-developed interview guide. The collected data were analysed using thematic coding to identify hidden barriers. For example, some students reported psychological discomfort when working with the complex interfaces of professional legal databases.

*4. Neuropedagogical monitoring of cognitive load*

During the quasi-experiment, students assessed their perceived workload using the NASA-TLX (Task Load Index) self-report scale. This method made it possible to measure the level of mental effort required when working with the interfaces of the LigaZakon and Ukincom systems. The aim was to identify moments of cognitive overload that are important for the neuropedagogical interpretation of the effectiveness of digital learning tools.

Several steps were taken to balance the effects of external variables, including teaching quality and access to technical resources.

*Control of initial knowledge.* Before the experiment, all participants completed a diagnostic test. The results showed no statistically significant difference between the experimental group and the control group ( $p > 0.05$  according to the Mann–Whitney test).

*Evaluation criteria.* The effectiveness of the programme was assessed through the solution of control legal cases. The following indicators were evaluated: 1) accuracy of reference to the relevant article of the law; 2) speed of locating the current version of legal provisions; and 3) completeness of the use of relevant case law.

*Statistical processing.* The data were analysed using the SPSS statistical package. Changes after the implementation of the programme were tested using the Wilcoxon signed-rank test for dependent samples.

In addition to accuracy indicators, the analysis also considered neurodynamic indicators. These included the latent reaction period (the time between task presentation and the start of the search process) and resistance to distractors in the digital environment. This approach made it possible to assess the extent to which the implemented methodology contributed to the automation of skills. It also allowed for the evaluation of stable neural patterns associated with professional activity.

## **5. Results**

*Analysis of the ascertaining stage (survey,  $n = 128$ )*

The initial diagnostics highlighted a significant gap between theoretical understanding and effective use of legal reference systems (LRS). Google is employed as the primary search platform by 78% of respondents, who value its speed and recognisable user interface. Only 12% indicated using professional legal databases (LigaZakon, National Aviation University) more than once a week.

The main barrier was not limited access to databases but cognitive resistance, reported by 64% of respondents. Students indicated that professional databases are difficult to navigate because of complex search filters and large volumes of unstructured information.

This result is consistent with the neuropedagogical concept of cognitive overload, described in Cognitive Load Theory. Complex database interfaces may increase cognitive load and discourage students from using professional systems. As a result, students tend to choose an energy-efficient strategy, relying on familiar tools such as Google, even though these tools provide less precise legal information.

These findings suggest that the barrier is not primarily technical. Instead, it is related to how students process visual and logical information when working with complex digital interfaces.

*Results of the quasi-experiment: dynamics of skills (n = 24)*

A comparison of the EG and the CG after the implementation of the programme revealed qualitative improvements with moderate statistical significance. In the EG, the accuracy of source selection increased by 34%, indicating a significant improvement in the ability to identify relevant legal materials. In addition, the average search time decreased from 12.4 minutes to 8.2 minutes. This reduction suggests that students gradually automated key search operations. As a result, fewer cognitive resources were required for technical search tasks, allowing students to focus more on the interpretation and analysis of legal norms.

*Table 1. Comparison of skills in experimental and control groups before and after the programme*

| Indicator (mean value)                    | EG<br>(before) | EG<br>(after) | CG<br>(before) | CG<br>(after) |
|-------------------------------------------|----------------|---------------|----------------|---------------|
| Time to find the current legal norm (min) | 12.4           | 8.2           | 12.1           | 11.5          |
| Number of errors in references            | 3.2            | 1.1           | 3.0            | 2.8           |
| Use of case law (%)                       | 15%            | 45%           | 18%            | 20%           |

Source: The authors' own conception

Although the overall speed of work increased only slightly due to technical limitations of the professional database systems (PDS), the accuracy of source selection in the EG improved by 34%. Students in the EG also began to use filters by date and document status (valid/invalid) more frequently.

*Results of in-depth interviews and observations.* Qualitative analysis confirmed that the main change occurred at the level of search strategy. Students in the EG abandoned "passive search" behaviours, such as limiting themselves to the first page of Google results.

Observations recorded that 9 out of 12 EG students, after finding an act on the Internet, proceeded to a professional database to verify its relevance. In contrast, only 2 students in the CG demonstrated this behaviour.

*Change in attitude.* Interviews indicated a decrease in technological stress. Students reported that, after analysing the filtering algorithms of the PDS, the systems "stopped seeming hostile".

This reduction in technological stress suggests a deactivation of the amygdala, the brain centre associated with fear and anxiety. By acquiring clear filtering algorithms, students shifted activity from zones of emotional resistance to rational cognitive control. Thus, the experimental method contributed not only to knowledge transfer, but also to changes in psychophysiological responses to a complex digital professional environment.

The results support the hypothesis that digital transformation in legal education is effective only when it accounts for the brain's cognitive "bandwidth". The transition of 75% of EG students to checking the relevance of acts in the PDS demonstrates a shift in dominant cognitive strategy: from impulsive consumption of information to critical analysis. This is a fundamental aspect of digital legal literacy.

The results of the survey informed the development of an experimental teaching method for the course in legal information systems. At the first stage, the need for a new method was

established. Its integration into the educational process also took into account the neurophysiological characteristics of modern students. At the second stage, an author-designed course was prepared. Its content was based on principles of neurodidactics, particularly on the stimulation of multiple channels of information perception to strengthen synaptic connections.

The new methodology was tested as follows. A study group of 24 students was formed. They were divided into a control subgroup (classical programme) and an experimental subgroup (new programme). When developing the course, standard didactic principles such as modularity and flexibility were followed. In addition, neuropedagogical strategies were incorporated to optimise cognitive load.

Video lectures and interactive presentations were used. These enabled dual coding of information (visual and auditory). According to neurodidactic research, this accelerates the transfer of information from short-term to long-term memory.

In the EG, particular attention was given to activating the prefrontal cortex through practical case exercises. Searching for information in the *LigaZakon* or *Ukincom* systems according to specified parameters required students to exercise a high level of cognitive control and analytical thinking.

The use of game mechanics, including Kahoot, Plickers, and electronic quests, facilitated the release of dopamine. This increase enhanced intrinsic motivation and established a positive emotional learning environment, helping to mitigate “legal nihilism” at the subconscious level.

The introduction of Moodle and Joomla distance learning platforms supported the implementation of individual educational trajectories. Learning could thus be adapted to the pace of each student’s brain activity. This aligns with neuropedagogical principles of adaptive learning.

Overall, the experimental methodology improved the quality of students’ knowledge. It also helped form stable professional activity patterns. These patterns were based on effective interaction between the brain and the digital legal environment.

## 6. Conclusions

The significance of this article lies in demonstrating the role of legal education in one’s legal socialisation. It encompasses the process through which individuals absorb, accept, and apply society’s legal values, ideas, experiences, emotions, legal assessments, norms, and behavioural models. In this regard, legal education can be recognised as a system of educational activities conducted within the framework of law. It is a long-term, purposeful process during which specialised techniques are used to cultivate a high level of legal awareness.

Meanwhile, public authorities increasingly rely on Internet resources. These resources serve as universal regulators of civic activity among young people. They influence decision-making in political matters, such as elections and referendums. The Internet also significantly influences the development and upbringing of young people. Users lacking proper preparation can face uncertain or contradictory legal situations.

This study also considers the importance of legal consciousness as a distinctive feature of legal reality. It examines the influence of digital transformation on the development of students’ legal culture. It also clarifies how digital technologies affect the professional training of legal specialists in Ukraine.

Digital transformation offers considerable opportunities to enhance legal education, alongside the need for a deliberate and well-structured approach. Educators can improve their digital proficiency through dedicated training and institutional guidance while designing immersive multimedia learning materials. Students gain from active participation in case studies and simulated exercises.

The article also highlights the importance of information technologies in legal education, with particular emphasis on systems such as *LigaZakon* and *Ukincom*. An experimental study involving law students found that a methodology focused on legal reference systems markedly improved their knowledge. It follows that updating legal education for the digital age requires the

adoption of advanced technologies, creative methods, and cross-disciplinary approaches. Together, these components are vital for preparing students for professional settings.

Therefore, the successful digital transformation of legal education is feasible only when the training content is neurodidactically adapted. This entails designing content that does not deplete students' cognitive resources but instead stimulates the development of stable neural patterns of legal behaviour. Future research should examine the impact of artificial intelligence on the evolving architecture of legal thinking in prospective specialists.

## 7. Statement on the Use of Artificial Intelligence

The authors note the use of artificial intelligence tools, including ChatGPT (OpenAI), to improve language, enhance clarity, and support online research. All final interpretations, conclusions, and scientific summaries were made solely by the authors.

## References

- Bazayev, O. (2024). *Legal consciousness as a philosophical and legal category: Historical and contemporary interpretations*. *Problems of Legality*, 167, 6–24. <https://doi.org/10.21564/2414-990X.167.319129>
- Bazeliuk, O. (2021). *Osnovni trendy i vyklyky tsyfrovizatsii u vyshchii osviti* [Main trends and challenges of digitalisation in higher education]. *Pedahohichniy dyskurs*, 31, 36–44. <https://doi.org/10.31475/ped.dys.2021.31.05>
- Chen, B., & Policarpio, P. (2024). *Strategies for enhancing legal application skills among college students*. *Journal of Education and Educational Research*, 10(3), 69–77. <https://doi.org/10.54097/c2k7g430>
- Davydova, I., Zhurylo, S., Havrik, R., Yakymchuk, S., & Samilo, H. (2023). *Implementing artificial intelligence in civil procedure and legal education: Challenges and perspectives*. *Revista de Tecnología de Información y Comunicación en Educación*, 17(4), 154–164. <https://doi.org/10.46502/issn.1856-7576/2023.17.04.15>
- Görnitz, T. (2025). *Quantum information as the scientific basis for the explanation of human consciousness and its evolution*. *BioSystems*, 252, 105467. <https://doi.org/10.1016/j.biosystems.2025.105467>
- Honchar, L., Derkachova, O., Shakhrai, V., Saienko, V., Hladoshchuk, O., & Voropayeva, T. (2021). *Formation of psychological readiness of the teacher to implement information and communication technologies in professional activities*. *International Journal of Education and Information Technologies*, 15, 364–371. <https://doi.org/10.46300/9109.2021.15.38>
- Huangal-Schneider, S., Cieza-Sánchez, J., Díaz-Paredes, M., Arriaga-Delgado, M., & Marchena-Tafur, A. (2023). *Neuroeducation and impact on higher education: A systematic review*. *International Journal of Evaluation and Research in Education*, 13(6), 3641–3652. <https://doi.org/10.11591/ijere.v13i6.29170>
- Kortleven, W. J., Holvast, N., & Bešić, A. (2024). *From adaptive to reflective law school socialisation: A theoretical and empirical contribution from the Netherlands*. *Legal Ethics*, 27(1), 63–83. <https://doi.org/10.1080/1460728X.2024.2399918>
- Rakhmetova, A., Meirova, G., Balpanova, D., Baidullayeva, A., & Nurmakhanova, D. (2024). *The use of elements of neuropedagogy in the creation of virtual simulators for in-depth study of chemistry in higher education*. *Journal of Technology and Science Education*, 14(2), 473–483. <https://doi.org/10.3926/jotse.2532>
- Shin, B., Floch, J., Rask, M., Bæck, P., Edgar, C., Berditchevskaia, A., Mesure, P., & Branlat, M. (2024). *A systematic analysis of digital tools for citizen participation*. *Government Information Quarterly*, 41(3), 101954. <https://doi.org/10.1016/j.giq.2024.101954>
- Shutt, H. E., Martin, L. S., & Coetzee, M. H. (2023). *The theatre of development: Dramaturgy, actors and performances in the 'workshop space'*. *Third World Quarterly*, 44(2), 377–394. <https://doi.org/10.1080/01436597.2022.2147060>

- Śliwa, S., Saienko, V., & Kowalski, M. (2021). *Educating students during a pandemic in the light of research. International Journal of Educational Development*, 87, 102504. <https://doi.org/10.1016/j.ijedudev.2021.102504>
- Xue, Y. (2024). *Legal education and the cultivation of practical abilities for law majors. Region – Educational Research and Reviews*, 5(6), 12–16. <https://doi.org/10.32629/rerr.v5i6.1528>
- Young, K. M., & Billings, K. R. (2020). *Legal consciousness and cultural capital. Law & Society Review*, 54(1), 33–65. <https://doi.org/10.1111/lasr.12455>
- Zaiarnyi, O., & Illarionova, S. (2025). *Zastosuvannia tekhnolohii shtuchnoho intelektu dlia navchannia maibutnikh pravnykiv na prykladi ChatGPT: Pedahohichni, pravovyi i tekhnolohichni aspekty* [Artificial intelligence in legal education: Advancing training for future professionals]. *Informatsiini tekhnolohii i zasoby navchannia*, 105(1), 158–177. <https://doi.org/10.33407/itlt.v105i1.5835>