IMMERSIVE TECHNOLOGIES IN HIGHER EDUCATION: POTENTIAL FOR TRANSFORMING PROFESSIONAL TRAINING

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Abstract. *The article examines the transformational potential of immersive technologies, in particular virtual (VR) and augmented (AR) reality, for legal education and legal proceedings. The purpose of the study is to provide a comprehensive analysis of the educational and legal capabilities of VR/AR, to identify their advantages and risks in the training of lawyers, and to assess the effectiveness of virtual simulations as a tool for professionalising legal activities. The article uses an interdisciplinary approach, which includes theoretical analysis of scientific sources and reports of international organisations (HolonIQ, PwC, ABA, EDUCAUSE), comparative study of global and national cases of immersive technologies, systematisation of practical experience of VR implementation in Ukrainian higher education institutions, and conceptual modelling of the role of VR/AR/MR in the formation of professional compe-*

tence. The authors analyse international studies by prominent scholars (D. Bailenson, M. Slater, J. Whittaker) and empirical examples of VR integration into legal education, in particular in the USA and Asia. The authors highlight the key role of immersive experience in the development of empathy, professional ref-lection, critical thinking and ethical sensitivity of future lawyers. The article also considers the use of VR in litigation to reconstruct events, visualise evidence and strengthen the arguments of the parties. The authors emphasise both the significant didactic potential of VR and the risks associated with it: cognitive distortions, excessive emotional involvement and the possibility of manipulation The authors conclude that there is an urgent need for regulatory regulation, methodological support and ethical assessment of VR tools in the field of legal education and practice. The authors define immersive technologies as an innovative resource for modernising the professional training of lawyers capable of integrating the knowledge, emotional and behavioural components of their competence.

Keywords: *virtual reality (VR); augmented reality (AR); immersive technologies; legal education; litigation; simulations; empathy; critical thinking; digital transformation; legal argumentation.*

INTRODUCTION

In today's environment, the digital transformation of education is not just a response to technological progress, but a critical factor in updating the content and methods of professional training of legal professionals. Legal education is increasingly integrating digital tools, which, despite widespread criticism, are not a source of prejudice. On the contrary, they can reveal hidden imbalances implicit in the current legal system. Digital technologies do not create inequality, but rather expose the extent to which it is rooted in socio-legal structures (Whittaker, 2019).

One of the most promising vectors of digitalisation is the use of immersive technologies that provide deep immersion in a simulated environment through visual, audio, and tactile stimuli. The categories of these technologies include: VR (Virtual Reality) – full immersion in virtual space, AR (Augmented Reality) – a combination of the real world and digital objects, MR (Mixed Reality) – interaction of physical and virtual environments (Milgram & Kishino, 1994).

Immersive learning is based on a constructivist approach, according to which knowledge is formed through the active interaction of the subject with the learning environment and social context. Virtual technologies create the prerequisites for this: modelling complex situations, multisensory stimulation, and the possibility of repeated practice stimulate the development of critical thinking, communication skills, and ethical reflection. Thus, VR transforms the learning paradigm from passive learning to active knowledge construction (Cho et al., 2021).

The use of VR is especially important in the context of the concept of 'smart education', which involves the full integration of digital tools into the structure of the educational programme. It is not just the auxiliary function of VR that is becoming important, but its integration at the course design stage, with a focus on the student as an active creator of knowledge, decisions, and analytical judgements (Mohamad et al., 2020). In legal education, the use of VR scenarios to simulate court hearings, legal advice, or procedural actions open up new opportunities for students to acquire practical skills. Immersive technologies provide a holistic understanding of legal processes, develop the ability to legal reasoning, critical analysis and interdisciplinary thinking that meets the modern challenges of the legal profession (Mohamad et al., 2020).

Immersive technologies are gradually becoming one of the key factors in the transformation of the modern educational space. Their particular relevance for Ukraine is determined by a number of strategic circumstances:

Ukraine is currently at war, which has led to the mass relocation of students and teachers, the destruction of educational infrastructure, and limited access to traditional forms of education. In these circumstances, immersive technologies become a tool for maintaining the accessibility and continuity of the educational process, ensuring the creation of virtual laboratories, courtrooms, models of international organisations, and other learning environ-

ments. They overcome spatial and institutional barriers, contributing to the preservation of educational potential and Ukraine's integration into the global academic space.

The use of VR/AR is consistent with the priorities of digitalisation and the competency-based approach reflected in the latest standards of higher education in Ukraine. Immersive environments stimulate the development of critical thinking, intercultural communication, the ability for interdisciplinary interaction, and the formation of professional skills, the reproduction of which is often impossible in a traditional classroom. For universities, such technologies are not only an innovative teaching resource, but also a powerful tool for increasing competitiveness, academic mobility and expanding international cooperation.

Immersive technologies are particularly important for training lawyers. Legal practice is based on communication, modelling procedural situations and making decisions in complex and stressful conditions. The use of VR technologies allows for the simulation of court proceedings, negotiations, mediation procedures, witness interrogations, or hearings in international arbitration. Such simulations create a safe learning environment where future lawyers can practice practical skills, analyse their own mistakes and develop the necessary competencies. In addition, the integration of VR into legal education prepares students for the realities of the digital transformation of justice, which involves the growing role of electronic evidence, online processes, and virtual court platforms.

Thus, immersive technologies are not only a modern innovative tool, but also a response to the pressing social challenges facing Ukraine.

METHODOLOGY

The purpose of the article is to analyse the transformational potential of immersive technologies (VR/AR) in higher legal education with a focus on the development of students' professional competencies. To achieve this goal, the following tasks have been identified:

1. Theoretical review of modern approaches to the digital transformation of higher education and determination of their capabilities in the development of cognitive, emotional and social competences.

2. Analysis of international and domestic experience of using VR/AR in the training of specialists in legal education.

3. Identification of the benefits, risks and ethical limitations associated with the use of VR in the educational process.

The methodological basis of the study is based on a systematic approach that allows us to consider the process of digital transformation of higher education and integration of immersive technologies (VR/AR) as a holistic, interconnected structure. This approach provides a comprehensive analysis of the interaction between technological innovations, educational processes, and the development of students' professional competencies. In addition, the study is based on the principles of the constructivist approach to learning. This paradigm is especially relevant for assessing the effectiveness of immersive technologies, as they promote active interaction between students and the learning environment, where knowledge is not just learned, but actively constructed through experience and reflection. The following methods were used in the study to achieve the objectives:

1. Theoretical analysis and synthesis of scientific literature for a comprehensive review of modern approaches to the digital transformation of higher education, identifying their potential in the development of cognitive, emotional and social competencies. The sources for the analysis were scientific publications, monographs, and reports of leading international organisations (such as HolonIQ, PwC, ABA, EDUCAUSE) specialising in the study of trends in education and technology.

2. Comparative analysis (for a detailed study and comparison of international and domestic experience of using VR/AR in the training of legal education professionals).

LITERATURE REVIEW

There is a steady interest in the introduction of immersive technologies, including VR/AR, in global educational practice. They are most intensively used in medical, engineering, and legal education, where it is critical to develop practical skills, professional identity, and emotional and cognitive maturity of future professionals.

Analytical reports by leading international educational and research centres – HolonIQ, 2025, PwC, 2020, EDUCAUSE, 2022 – unanimously point to a significant increase in the efficiency of the educational process when VR and AR are integrated. For example, the PwC report states that participants in VR courses demonstrate four times higher concentration than those who studied in an electronic format, and 1.5 times higher concentration than in classroom training. This effect is attributed to the deep sensory immersion that activates the user's visual and cognitive resources while minimising distractions. In addition to enhancing concentration, VR training provides more effective knowledge acquisition due to the multisensory nature of the interaction: the combination of visual, auditory, and motor channels activates complex cognitive mechanisms that contribute to deeper understanding, longer retention of information, and integration of knowledge into previous experiences (PwC, 2020). About 75 % of participants in the VR inclusivity training noted that they experienced a moment of deep awareness of their own prejudices, which prompted self-reflection and reconsideration of personal positions (Likens & Mower, 2022; Granado & Ramirez, 2024).

In the context of legal education, immersive technologies are increasingly seen as an effective tool for developing both professional and interpersonal competences. Bailenson, (2018) and Slater, (Slater et al., 2019; Slater & Banakou, 2021) focus on the potential of VR in the development of *soft skills*, including empathy, ethical sensitivity, communication flexibility and reflection.

Bailenson's research shows that VR environments based on the principles of simulation create conditions for emotionally meaningful but safe immersion in situations of social tension – discrimination, conflict, and stressful dialogue. This allows students to practice active listening, critical reflection on the behaviour of participants, ethical analysis and self-observation. An important mechanism that ensures the depth of this immersion is the concept *of body transfer* – a temporary virtual embodiment of the user in another person. This allows a person to identify with the experience of the 'other', to better understand their motivation, emotional state and social position. This effect of 'experiencing the experience of the other' opens up new opportunities for legal androgogy, legal psychology, and intercultural communication, facilitating the transition from formal knowledge acquisition to deep emotional and value-based learning. At the same time, Bailenson draws attention to a number of risks associated with the use of VR: in particular, a possible oversaturation of simulation content, which can lead to desensitisation and a reduced emotional response to real events; physiological effects such as 'simulation sickness' (nausea, disorientation); technological dependence in the youth environment; and ethical issues of civilian use of VR training created for military training.

Slater also made a significant contribution to the study of the psychological mechanisms of VR education, focusing on the analysis of such basic cognitive phenomena as the sense of presence, copresence, and body ownership illusion. Empirical evidence confirms that these effects can significantly influence behavioural patterns, enhance empathic responses, deepen self-reflection, and increase the effectiveness of interpersonal interaction. One of the most representative examples of VR in the educational context is the study '*An Experimental Study of a Virtual Reality Counselling Paradigm Using Embodied Self-Dialogue'* (Slater et al., 2019), which developed the concept of virtual self-dialogue (*embodied self-dialogue*). The participants of the experiment took turns embodying the avatars of a client and a consultant, mo-

delling a dialogue with themselves from different perspectives. This model of interaction proved to be highly effective in stimulating self-reflection and awareness of internal psychological barriers. The key mechanism of effectiveness is the virtual embodiment – the state in which the user identifies with the digital avatar. Studies show that when an avatar is visually similar to a person, the level of emotional engagement, trust, and reflective immersion in the situation increases. In addition, Slater's team has been exploring VR environments with haptic feedback, which allow you to simulate complex social interactions. The experiments showed an increase in the participants' empathic sensitivity, activation of proactive social behaviour, a stronger sense of responsibility and readiness for constructive interaction. Such effects are particularly significant for legal education, which involves not only the acquisition of legal knowledge, but also the development of ethical awareness, emotional maturity, the ability to reflect critically and communicate persuasively in complex interpersonal or professional situations.

Both Bailenson and Slater emphasise the need to adhere to ethical standards, transparency of the goals of simulations, and the availability of quality pedagogical support when introducing VR into the education system (Bailenson, 2018; Slater & Banakou, 2021).

One of the best examples of the successful integration of immersive technologies into the system of training future lawyers is the DiVRse platform developed by KIIN. This VR system is aimed at developing key *soft skills*, including empathy, active listening, emotional intelligence, effective communication, and the ability to respond adequately to discriminatory situations (bystander training). The programme is based on the principles of cognitive psychology and neuroscience, combining scientifically based models of social behaviour with the technological potential of the virtual environment (KIIN, 2025).

VR trainings within the DiVRse platform allow users to:

• develop empathy and emotional intelligence necessary for effective interaction with vulnerable categories of people (victims, minors, people with disabilities);

• improve communication skills, which are crucial in the field of court debates, legal negotiations, and advocacy;

• to develop ethical sensitivity and the ability to prevent discrimination – competences that are key in the field of human rights protection;

• to stimulate identification with professional values through immersion in simulated situations that reflect the real challenges of legal practice.

The combination of virtual reality tools with psychologically validated training models creates a new quality of pedagogical interaction that contributes to the formation of a holistic professional identity of a lawyer – not only as a qualified specialist, but also as an ethically responsible member of the legal community.

Of interest are the observations of Chinese researchers who, based on an analysis of the effectiveness of VR in simulated trials, concluded that VR promotes the development of analytical thinking, argumentation and law enforcement competence. In VR scenarios, students play all the roles – from judge to witness – in an interactive digital court, which forms a holistic procedural mindset (Jian et al., 2019). VR platforms not only provide access to practical training, but also create a safe, controlled environment where students can interact, make mistakes, analyse their actions and reflect on the consequences of their decisions. This approach allows for the presentation of the content of the court procedure along with the development of procedural thinking through the interactive experience of a professional role, which surpasses the capabilities of the traditional case method, which is limited mainly to analytical processing of texts and does not involve practical action (Jian et al., 2019). Outlines three key principles of VR education in the field of law:

1. Immersion – active participation in a procedural context.

2. Integrity of the process – covering the full cycle of the trial.

3. Role identification – the development of professional thinking through embodiment in a legal role.

Sanmartin et al. (2024) argues that the introduction of VR into legal education opens up the possibility not only to model complex professional situations, but also fundamentally changes approaches to the acquisition of legal knowledge. The researchers propose to consider VR courses as a tool for developing an intuitive understanding of the deep mechanisms of law – not only how the law 'works', but also why it works in this way.

In the context of legal training, the authors identify three key principles for designing VR environments:

1. Knowledge production and transformation – the interaction between empirical experience and academic theory. This approach allows not only to reproduce knowledge, but also to understand the processes of its formation, transformation, and the challenges faced by the legal system.

2. Interdisciplinarity – VR models create conditions for cooperation between students with different professional backgrounds, which facilitates learning in the format of joint problem-solving at the intersection of industries.

3. The connection between theory and practice – VR provides an opportunity to immerse oneself in simulated but authentic situations in which students learn to analyse localised knowledge, experience and identities in a legal context.

According to the researchers, the VR environment allows for a deep integration of theoretical provisions with law enforcement practice. Students not only learn the rules, but also begin to perceive law as a living, dynamic social practice. Simulating courtroom situations, negotiation processes, mediation, or ethical dilemmas develops the ability of future lawyers to anticipate legal risks, think analytically, identify conflicts at early stages, and understand cause and effect relationships in legal processes.

Sanmartin pays special attention to the role of VR in shaping the onto-epistemological paradigm of legal education. Immersive technologies, in his opinion, are not limited to the function of visualising educational material. They contribute to a critical understanding of the very concept of law, the challenges posed by digital environments to legal identity, corporeality and the spatial and temporal framework of legal action. This approach stimulates reflexivity and opens up opportunities for challenging traditional binary categories such as human/non-human, real/virtual, law/technology.

Thus, VR technologies can be viewed as a catalyst for the transformation of legal education – from a reproductive model to a critical and experiential one focused on proactive legal analysis, ethical responsibility and creative autonomy of the subject of law (Sanmartin & Niemi, 2024).

Ukrainian scientists are also making a consistent contribution to the development and implementation of immersive technologies (VR/AR/MR) in higher education. For example, V. Liubchak and co-authors (Sumy State University) proposed a model of an 'immersive institute' – a university VR/AR laboratory that integrates technical support, immersive learning methodology, software development and evaluation of its effectiveness, and implements innovative approaches in educational programmes (Liubchak et al., 2022). K. Binytska and a team of authors revealed the potential of immersive technologies in creating an inclusive educational environment for students with special educational needs, proving that VR/AR/MR contribute not only to professional training but also to the formation of social and emotional experience of students (Binytska et al., 2022).

R. Tarasenko and co-authors focused on the use of AR elements in foreign language teaching, in particular virtual tours and QR codes, which increase the effectiveness of vocabu-

lary acquisition, promote the development of communication skills, and take into account different learning styles. At the same time, they identified a number of technical barriers, including dependence on infrastructure, heterogeneity of mobile devices and software, instability of Internet connections, and insufficient digital literacy among students (Tarasenko et al., 2020). Despite significant scientific developments in the field of VR/AR/MR implementation in higher education, there is a lack of targeted research on the use of immersive technologies in the training of future lawyers. This creates a promising scientific and practical direction that is important for the modernisation of legal education in Ukraine in the context of digital transformation.

MAIN RESULTS

The practical implementation of VR in legal education is vividly illustrated by the specialised session 'Using Artificial Intelligence (VR Courtroom) as a Pedagogical Tool to Enhance Clinical Legal Education and Advance Access to Justice' held at the Third Asian Conference on Clinical Legal Education (BABSEACLE, 2025). The central element of the discussion was the VR Courtroom Game, an interactive learning environment developed by the University of Johannesburg Faculty of Law in collaboration with the Innovation Lab. This digital platform simulates virtual court hearings where students can play procedural roles, interact with other participants and analyse the course of a trial under simulated legal uncertainty.

Special attention was paid to the role of VR Courtroom in the development of key clinical competencies: emotional balance, ability to ethical analysis, argumentative flexibility and responsible decision-making (BABSEACLE, 2025). The content of the session reflects the global trend of integrating digital technologies into clinical legal education. The purpose of such integration is not only to increase the professional readiness of students, but also to expand access to justice for socially vulnerable groups. Thus, the VR Courtroom Game appears to be an effective tool for innovative learning that combines immersive experience, artificial intelligence and clinical methodology into a single pedagogical format.

In the United States, immersive technologies are being consistently integrated into legal education as an effective tool for simulation-based learning. VR environments implemented in individual law schools are typically structured around three key components: spatial modelling (e.g. virtual courtrooms or interrogation rooms), adapted legal scenarios, and procedural modelling elements. Such systems contribute to better learning of the material, formation of situational thinking and development of legal argumentation skills.

VR is especially valuable in an interdisciplinary context: some courses combine the study of law with ethics, psychology, sociology and communication technologies. This opens up the way for students to develop critical thinking, emotional sensitivity, and skills of interaction in the digital environment – that is, the knowledge, skill, and value competencies that are becoming increasingly relevant in the era of e-justice.

Despite the fact that VR is not yet a massive standard in US legal education, institutions such as the University of Oklahoma College of Law, Stanford Virtual Human Interaction Lab, and Loyola Marymount University are already implementing successful pilot projects. They demonstrate the significant potential of VR as an experiential learning tool in the legal context.

For example, at the Stanford Virtual Human Interaction Lab, Bailenson and his team are actively researching the cognitive and emotional effects of virtual reality technologies in the field of law. In particular, they are studying the impact of VR on legal ethics, understanding of human rights, and the development of empathy through the mechanism of emotional embodiment in avatars. A vivid example of this approach is the programme "Becoming Homeless: A Human Experience" programme, which simulates the experience of losing your home. This immersive scenario allows users to feel the psychological stress associated with social vul-

nerability and realise the complexity of choices in the face of life instability. The programme is widely used in educational courses on social welfare and human rights, as it is an effective tool for developing sustainable empathy, human rights motivation and ethical sensitivity of future lawyers.

Since 2014, OU College of Law has been implementing the Digital Initiative programme, the first comprehensive strategy for the digital transformation of legal education in the United States. This initiative involves the introduction of specialised courses in legal technology and the creation of a high-tech educational environment – the Inasmuch Foundation Collaborative Learning Centre. The Centre's VR stations allow simulating professional situations in the field of law. An important part of the innovation ecosystem is also the Centre for Technology & Innovation in Practice, which specialises in researching and implementing immersive technologies in the educational process. According to the head of the centre, Brice, OU College of Law students actively use VR technologies to improve their advocacy skills: 'One student even created a 360-degree video of his courtroom speech using VR technology, which he then used for self-reflection and improvement of his public speaking technique' (Just Legal VR, n. d.).

The Immersive Technology Service project at Loyola Marymount University is focused on the development and implementation of augmented reality (XR) technologies, including VR and AR, 3D modelling and 360° video in the educational process. This service, which operates within the Instructional Technology Unit, provides teachers and students with tools to integrate immersive technologies into their curricula. Its main areas of activity are: providing consulting and technical support to teachers, developing and testing educational scenarios that activate cognitive activity through simulated situations, and creating a flexible educational space for demonstrations, group classes, interdisciplinary research and creative expe-riments. The university is also implementing the LMU VR Pop-Up Lab initiative, which involves demonstrations of VR technologies in various locations on campus. This approach helps to expand students' access to modern visualisation and interaction tools, providing greater flexibility and accessibility of using XR in the learning process, as well as increasing the inclusiveness and technological literacy of future professionals.

Immersive technologies are gradually being integrated into the practice of judicial proceedings, demonstrating significant potential in visualising complex evidentiary information. According to analytical reports by the American Bar Association (ABA), VR and AR technologies can significantly enhance evidentiary arguments in cases requiring detailed technical or spatial analysis. These tools are particularly effective in cases involving engineering and technical disputes or conflicting testimony from the parties.

An illustrative example is the case of the company *J. S. Held*, in which VR technology was used in a case involving a road accident at a railway crossing. The expert team created a three-dimensional reconstruction of the scene using photogrammetry, implemented in the format of VR animation through the *Oculus Go* headset. This allowed the jury to virtually 'move' around the modelled scene, change viewing angles, analyse visibility conditions and the spatial location of objects at night. According to experts, this visualisation significantly improved the perception of complex technical aspects of the case and contributed to a more informed analysis of the evidence.

At the same time, the ABA draws attention to the potential risks of using VR in litigation. The main threat is the possibility of perceiving a virtual reconstruction as objective truth, even when it is based on assumptions or hypothetical scenarios. Such a perception can lead to cognitive distortions, emotional bias of jurors and, as a result, a violation of the principle of procedural neutrality. In this regard, the ABA calls for a regulatory framework for the admissibility of VR evidence in court. In particular, it is necessary to introduce procedures for

assessing their authenticity, technical accuracy, objectivity and compliance with the criteria of evidence. In the absence of an appropriate regulatory framework, the use of VR can turn from an innovative tool to a factor that threatens compliance with fair trial standards (Heidrick, 2025).

The modern digital transformation of legal education is increasingly focused on the development of interpersonal, communication and presentation skills, which are key components of a lawyer's professional competence in the digital age. One example of effective integration of immersive technologies into legal education is the cooperation of ZHAW School of Management and Law with the British EdTech platform VirtualSpeech. As part of this initiative, since 2016, more than 100 students of ZHAW's master's programmes have undergone VR training using virtual simulations of professional situations.

The analytical system of the VirtualSpeech platform allows users not only to practice public speaking, negotiation and debate skills, but also to receive an automatic assessment of key speech parameters such as speech structure, pace, frequency of parasite words, eye contact, and gestures. This ensures systematic self-reflection and a personalised professional development trajectory. Of particular methodological value is the Debating Skills module, which involves participation in debates with virtual opponents or moderators controlled by artificial intelligence. This format promotes the development of argumentation skills, critical thinking, and flexibility in discussion – competences directly relevant to the professional activities of a lawyer, judge, or human rights defender.

Researchers at The Open University (UK), as part of the Open Justice Centre, have developed a highly realistic virtual courtroom – *Virtual Courtroom* – that provides a deep immersive experience. The project was implemented as an innovative platform for experimental teaching of legal disciplines in the digital environment and the development of practical competences of future lawyers.

An empirical study conducted by the University of Westminster (Smith & Jacobs, 2020) showed that 83 % of students after completing VR simulations reported increased confidence in their practical skills and increased professional motivation, which confirms the significant potential of VR as a means of experiential legal education (Smith & Jacobs, 2020).

Virtual Courtroom runs on the *Unity* platform and supports multi-user access mode – both through VR headsets and regular web browsers. Users can choose procedural roles (judge, lawyer, witness, etc.), move freely through virtual space, participate in real-time hearings, communicate, and simulate typical court procedures. The training design places particular emphasis on developing public speaking skills, legal argumentation, and compliance with procedural ethics in a simulated environment. The initiative was officially launched in 2021 in response to the challenges of hybrid and distance learning in legal education. According to student feedback, the use of VR provides a higher level of cognitive engagement and interactivity compared to traditional online tools (Zoom, MS Teams), promoting a deeper understanding of the procedural logic of the judicial process.

In 2022, the University of Ottawa launched an innovative educational project, *LeClair x uOttawa Metaverse Moot*, aimed at adapting legal education to the conditions of the digital transformation of justice. This initiative is being implemented in collaboration with the law firm *LeClair & Associates*, which is providing funding for the programme until 2026. *Metaverse Moot* is one of the world's first initiatives to organise *moot court* competitions in a fully or partially virtual format.

The programme aims to develop the procedural and advocacy skills of second-year law students (2L) through participation in VR simulations of court hearings. Using the *ENGAGE* or *Unity platforms*, participants create avatars, form legal positions, present arguments and interact with virtual judges. The topics covered include current issues in modern legal prac-

tice, ranging from labour disputes to professional ethics and the use of artificial intelligence in legal analysis. The organisers emphasise that the VR environment significantly increases participant engagement, promotes the development of communication skills, critical thinking and the ability to act in non-standard situations. The immersive format allows students to effectively combine theoretical knowledge with practical skills, gain a deeper understanding of the logic of the judicial process, and develop emotional resilience in legal debate situations. Thus, *Metaverse Moot* emerges as a new paradigm of legal education, within which VR technologies play the role not only of a simulation training tool, but also of a full-fledged educational platform capable of shaping the professional identity of a lawyer in the context of the digital transformation of justice.

In the context of developing the procedural skills of future lawyers, the innovative commercial platform *JUST Legal VR*, developed in collaboration with the *Funnel 33* team, is attracting growing interest. The main purpose of this digital development is to simulate elements of legal practice through virtual modelling of court proceedings, debates, interrogations and witness preparation. The platform functions as a controlled educational environment designed for both law students and practising lawyers who seek to improve their professional competencies in an immersive format.

JUST Legal VR is available through the *Meta Quest Store* and is characterised by active development of functionality, including the introduction of multi-user modes for simulating full-format court hearings, mediation procedures and witness training. This approach opens up new opportunities for modernising legal education, creating an effective learning space for developing key advocacy skills – from strategic argumentation to communicative flexibility in a procedural environment.

Information technology expert V. Swindle emphasises that VR technologies have the potential to radically transform legal education, making it immersive, practice-oriented and, at the same time, ethically sensitive. In her opinion, virtual environments can significantly expand learning opportunities, replacing traditional courtrooms with simulated spaces where students can "interact with virtual judges, jurors, and lawyers in simulated scenarios that are as close as possible to real situations" (Swindle, 2024). This format creates a safe and controlled environment in which future lawyers can develop advocacy, legal argumentation and emotional self-regulation skills without the risk of making real procedural mistakes. In addition, VR platforms, as the researcher emphasises, can contribute to a deeper understanding of human rights issues, the formation of ethical sensitivity and the strengthening of the professional identity of legal education seekers. Thus, the potential of VR in legal education is seen not only as a technological innovation, but also as a powerful pedagogical tool capable of ensuring a high level of interactivity, ethical reflection, and professional readiness of future specialists (Swindle, 2024).

Despite the lack of large-scale or systematic cases of VR technology implementation in legal education in Ukraine, individual initiatives are already laying the groundwork for future development in this area. In particular, there is a gradual integration of immersive technologies into related educational practices, which creates the conditions for the implementation of VR solutions in legal training.

The Institute for Digitalisation of Education of the National Academy of Educational Sciences of Ukraine occupies a leading position among domestic research institutions that systematically study and implement immersive technologies in the field of education. In recent years, it has initiated a series of scientific events dedicated to the application of AR and VR in the educational process. In particular, the annual international conferences 'Immersive Technologies in Education' contribute to the formation of a stable expert community united by the idea of digital transformation of the educational space. These conferences actively dis-

cuss the integration of immersive technologies into various fields of knowledge, in particular legal education, where virtual simulations and environments are increasingly used to develop students' professional competencies.

The Institute for Digitalisation of Education of the National Academy of Educational Sciences of Ukraine conducts a systematic analysis of the opportunities and challenges of implementing immersive technologies. (AR/VR/MR/XR) in the educational process. O. Burov et al. argue that synthetic environments that are unnatural for humans can affect students' cognitive and physiological processes and provoke cyber diseases caused by personal, technological, and operational factors. The researchers proposed a theoretical framework for the functional system of educational activities and developed a methodology for assessing the impact of VR/AR through a combination of cognitive tests and physiological measurements, which makes it possible to identify overload in a timely manner and adjust the learning process (Burov et al., 2024). I. Polyashchenko emphasises the role of VR/AR as a 'bridge' between traditional and distance learning and proposes a model for their use to personalise the educational experience, promote interactive knowledge acquisition and increase learning motivation, which at the same time contributes to the development of critical thinking and prepares students for the challenges of the 21st century (Poliaschenko, 2025). A. Sukhikh emphasises the ethical, pedagogical, and technical challenges of using VR/AR in schools and develops a concept of responsible use of technology, which involves ensuring educational relevance and age appropriateness of content, personal data protection and digital security, equal access for all categories of students, as well as teacher training and the establishment of physical safety rules (Sukhikh, 2025). Taken together, these approaches demonstrate the comprehensive contribution of Ukrainian scientists to the formation of a holistic model for the integration of immersive technologies into education, where they are not only an innovative tool but also a strategic resource for improving the quality, motivation and safety of the educational process.

An example of the integration of VR technologies into the educational process is the activity of the Immersive Technologies Laboratory at the Academician Yuriy Bugay International University of Science and Technology (MNTU, Kyiv). This innovative research centre, equipped with modern VR headsets – HTC Vive, Oculus and HoloLens – provides a platform for interdisciplinary research and practical training using immersive digital environments. The laboratory is designed to promote the development of competencies in areas that require a deep understanding of visual-interactive processes, primarily in engineering and medicine. At the same time, its infrastructure capabilities are well suited for the development and testing of educational VR scenarios in the legal field – in particular, modelling crime scene investigations, court hearing simulations, alternative dispute resolution procedures, or advocacy practice.

In 2024, the IP Academy at the Ukrainian Institute of Intellectual Property (NIVO), with the support of the World Intellectual Property Organisation (WIPO) Academy, launched a training course for higher education teachers. The programme, implemented as part of the project 'Intellectual Property and New Technologies for Higher Education Institutions', aims to provide participants with up-to-date knowledge about the impact of digital innovations – in particular artificial intelligence, virtual and augmented reality – on the regulation and protection of intellectual property rights. Particular attention is paid to analysing the potential of VR/AR in the educational process, the ethical challenges of the digital environment, and teaching tools using gamification, social networks, and artificial intelligence technologies. Although the programme is not a direct practical application of VR in legal education, it develops the digital literacy of teachers and creates the conditions for the further development of VR content in the field of intellectual property law.

Among Ukrainian educational institutions that have shown interest in introducing VR/AR technologies into the educational process, the Kyiv University of Law of the National Academy of Sciences of Ukraine stands out. In a series of publications prepared by the university's researchers, the potential of immersive technologies as a tool for developing interdisciplinary and practice-oriented competencies is argued. In particular, Ulischenko's (2022) article 'Features of the application of immersive learning technologies in higher education' focuses on the ability of VR/AR environments to create the effect of deep immersion in learning situations that are as close as possible to the real professional context. The authors emphasise that immersive learning contributes to the formation of critical thinking, reflective skills and emotional engagement – components that are key to the training of competent specialists (Ulishchenko, 2022). Further exploration of this topic is taking place in an interdisciplinary context focused on the development of integrated training programmes.

Currently, VR technologies are being integrated into Ukrainian legal education in areas such as legal language studies, interdisciplinary technical laboratories, teacher training, and academic discussions. However, these isolated steps have significant potential for scaling up. It is important to expand VR components through strategic educational initiatives:

• Adapting the existing VR infrastructure of technical universities to the needs of law faculties (in particular, for simulating court proceedings, investigative experiments, negotiations, and mediations).

• Developing national VR scenarios based on ECHR practice, Ukrainian legislation, and real cases concerning the rights of IDPs, veterans, victims of domestic violence, and freedom of expression.

• Integration of VR modules into the curricula of legal clinics, disciplines of mediation, human rights, legal deontology with a focus on empathy, critical thinking and ethical reflection.

• Training a multidisciplinary team of teachers, including specialists in psychology, ethics, pedagogy, and IT to support VR training.

• Involvement in international grant programmes (Erasmus+, Horizon Europe, OSF) to finance the creation of VR laboratories, exchange of experience, and academic mobility.

In the future, Ukrainian law schools will be able to not only integrate VR technologies as an auxiliary tool, but also develop comprehensive courses with virtual simulations of law enforcement practices that meet European standards of legal education.

CONCLUSIONS

An analysis of scientific sources, reports from international organisations, and practical experience in the application of immersive technologies in the digital transformation of education has made it possible to identify both the key advantages and significant challenges of introducing virtual reality (VR) into the process of professional legal training.

Advantages of integrating VR into legal education:

1. Development of practical law enforcement skills in a safe environment. VR moot court simulations allow for the accurate reproduction of court proceedings, the preparation of procedural documents, participation in debates, analysis of evidence, and the rendering of decisions. Students play the roles of judges, lawyers, prosecutors, court clerks or parties to the proceedings, which provides a comprehensive understanding of the structure and logic of the judicial process. Digital models allow students to test different tactical approaches and explore the dynamics of procedural norms, deepening their understanding of the interrelationships between legal actions and decisions. The use of VR has been made possible by the creation of specialised platforms (Immerse Court, Virtual Justice Systems, MootXR) that simulate typical court practice in accordance with international law.

2. Development of communication skills in conditions of emotional stress and legal uncertainty. Legal practice involves interacting with participants in stressful situations where

responsible decisions must be made quickly. VR scenarios of court debates, interrogations, investigative actions, and negotiations allow such conditions to be simulated without legal risks. They contribute to the formation of argumentative consistency, ethical behaviour, emotional stability, clarity of expression and tact – critically important skills for legal professions.

3. Improving legal case analysis skills with interactive 3D modelling. The use of educationally adapted Unity and Unreal Engine platforms makes it possible to create dynamic models of legal situations covering all stages of legal qualification – from identifying an offence to evaluating evidence. Visualisation of the scene of the incident, the moment of arrest, or spatial diagrams deepens law enforcement thinking, making VR effective in criminal, administrative, and labour law, particularly in simulations of conflicts between employers and employees. Reflective debriefing after exercises promotes the development of strategic thinking and error analysis.

4. Application of knowledge in simulated or real professional situations. VR platforms, in accordance with the principles of the competency-based approach, are not optional but an integrated component of the learning process. The 'learning through activity' model provides interdisciplinary training for lawyers, taking into account cognitive, emotional and behavioural aspects. Examples of VR integration into training courses include:

• Criminal Procedure': simulation of procedural actions (arrests, interrogations, debates).

• Civil and Commercial Law': simulation of property disputes, contract cases, mediation.

• Legal Deontology': modelling ethical dilemmas and conflicts of interest. VR models promote critical thinking, autonomous decision-making, ethical self-control, and legal analysis skills in conditions of uncertainty.

5. Development of emotional intelligence and empathy. Immersive VR role-playing scenarios, which are actively used in European clinical legal education programmes, allow for the development of humanistic competencies – empathy, tolerance, ethical reflection. Modelling professional situations with a high level of emotional stress contributes to the development of ethical judgement, which is particularly important for future lawyers in the context of socially responsible legal practice.

Challenges of integrating VR into legal education:

Despite the recognised potential of immersive technologies, the integration of VR solutions into the legal education system is accompanied by a number of challenges that require a comprehensive and strategically calibrated approach.

1. Financial barriers to implementation. Creating a full-fledged VR infrastructure requires significant investment in hardware and software, including the purchase of specialised virtual reality headsets, high-performance computers, licensed software, and regular maintenance. For many higher education institutions, especially in the context of limited public funding, such costs are economically burdensome. In addition, the need for periodic equipment upgrades results in a long-term budgetary burden that requires planning and external support.

2. Staff shortages in the development of educational VR content. Effective development of educational VR scenarios requires the formation of interdisciplinary teams, which should include not only technical specialists (programmers, 3D designers), but also lawyers, educators, specialists in teaching methodology and educational psychology. Given the lack of trained personnel in the EdTech field and the absence of systematic inter-sectoral cooperation, the creation of full-fledged VR content remains a serious organisational challenge. This necessitates support from educational platforms, the state, and the private sector.

3. Lack of standardised tools for assessing the results of immersive learning. To date, there are no established criteria for objectively assessing the level of competence developed in a

VR environment, such as ethical thinking, empathy, communication skills and procedural flexibility. This complicates the integration of VR modules into the structure of curricula, especially in the context of formalised accreditation systems and standardised assessment that operate within higher legal education. Thus, there is a need to develop new pedagogical approaches to validating the results of immersive learning.

In conclusion, it should be emphasised that immersive technologies (VR/AR) have significant transformative potential for higher legal education. They provide the opportunity to simulate complex professional situations, which contributes to the development of critical thinking, the formation of practical skills and the improvement of communication skills of future lawyers. Acting as a catalyst for modernisation, VR/AR integrate traditional approaches to knowledge transfer with the experience of immersion in virtual scenarios, creating a more interactive and competence-oriented educational environment. This helps build the set of professional skills that modern lawyers need to work effectively in the digital age and globalised legal space.

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