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THE USE OF VIRTUAL EDUCATIONAL SPACE DESIGN IN ENHANCING STUDENTS' STRESS RESISTANCE

EL USO DEL DISEÑO DE ESPACIOS EDUCATIVOS VIRTUALES PARA MEJORAR LA RESISTENCIA AL ESTRÉS DE LOS ESTUDIANTES

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RESUMEN

La necesidad de que los docentes posean competencias digitales es un tema muy relevante en la educación actual, a medida que las herramientas tecnológicas se vuelven más sofisticadas y están más integradas en la vida cotidiana, los docentes deben adaptarse a nuevas plataformas, aplicaciones y métodos. Desarrollar y capacitar las competencias digitales de los docentes no solo mejora la calidad educativa, sino que también garantiza que los estudiantes tengan la oportunidad de acceder a una formación adecuada para el mundo digital en el que vivimos. El objetivo de la investigación fue analizar las competencias digitales docentes de la institución Galo Plaza Lasso de la provincia de Galápagos - Ecuador. La metodología tuvo un enfoque cuantitativo, con un estudio transversal y un diseño no experimental. Se emplearon métodos teóricos como el inductivo-deductivo y el análisis-síntesis, se utilizó la encuesta como método empírico, el método matemático fue la estadística descriptiva. La población/muestra analizada fue de 29 docentes de la unidad educativa antes mencionada. Los principales resultados evidenciaron que la falta de conectividad estables, recursos tecnológicos adecuados, formación continua y acompañamiento técnico, limitan el desarrollo pleno de las competencias digitales en los docentes, a pesar de que existe un aceptable uso de herramientas básicas y tecnología en la enseñanza. Se concluye en que las competencias digitales docentes serán fortalecidas mediante la capacitación continua, lo que permitirá una enseñanza innovadora y efectiva.

Palabras clave:

Competencias digitales, Recursos tecnológicos, Docentes

ABSTRACT

The need for teachers to possess digital skills is a highly relevant issue in education today. As technological tools become more sophisticated and integrated into everyday life, teachers must adapt to new platforms, applications, and methods. Developing and training teachers' digital skills not only improves educational quality but also ensures that students have the opportunity to access adequate training for the digital world in which we live. The

objective of the research was to analyze the digital skills of teachers at the Galo Plaza Lasso institution in the province of Galápagos, Ecuador. The methodology took a quantitative approach, with a cross-sectional study and a non-experimental design. Theoretical methods such as inductive-deductive and analysis-synthesis were used, the survey was used as an empirical method, and the mathematical method was descriptive statistics. The population/sample analyzed consisted of 29 teachers from the aforementioned educational unit. The main results showed that the lack of stable connectivity, adequate technological resources, continuous training, and technical support limit the full development of digital competencies in teachers, despite the acceptable use of basic tools and technology in teaching. It is concluded that teachers' digital competencies will be strengthened through continuous training, which will enable innovative and effective teaching.

INTRODUCTION

The rapid pace of modern life contributes to the accumulation of negative emotions and heightened stress levels. In this context, stress resistance plays a crucial role, enabling individuals to cope with stress by reappraising and reframing challenging situations (Stepanova et al., 2025). Students represent one of the most vulnerable social groups, as they tend to respond particularly acutely to social transformations. They frequently face significant intellectual demands, often combine study with employment, search for their place in society, solve problems in conditions of uncertainty and change, develop patterns of interaction with the educational environment, shape their values and principles, adapt to diverse living conditions, learn to regulate their life trajectories, and acquire professional competences.

The presented foundations of the life activity of future specialists, together with the evolving demands of educational service consumers, necessitate the design of a specialized educational space within higher education institutions that would serve as a key factor in personality formation and development (Ramazanova et al., 2021). Furthermore, the concept of educational space design is undergoing transformation in response to advances in information and communications technologies (ICT), acquiring new meaning and content. With the rapid development of ICT, the educational space extends into the virtual domain, most commonly realized through distance learning formats (Akhmetshin et al., 2024).

However, the widespread adoption of distance learning during the urgent introduction of quarantine restrictions in higher education institutions amid the pandemic exposed a number of psychological, valeological, pedagogical, and technological challenges in ensuring the organization of a safe and well-balanced educational environment. In addition, the level of anxiety and emotional tension among future specialists, generated by autonomous learning conditions within a virtual environment, is a cause for concern. Therefore, there is a pressing need to comprehensively examine the continuous influence of virtual educational space design on the stress resistance of future specialists, who remain sensitive and vulnerable to change even under real-world conditions (Mirzoyan, 2023). The present study is particularly relevant in the context of applying various forms of distance education, including digital methods of organizing the educational process, within inclusive practices that continue to utilize online platforms after the pandemic (Zharova, 2024). Working with this category of students requires maximum attention from psychologists and social workers since individuals with special needs, including educational needs, are among the least protected (Abdullayev et al., 2024; Popandopulo et al., 2025).

The design of an educational space is widely studied in academic literature. Scholars focus on defining its essence, structural characteristics, and developmental patterns. Key approaches to educational space design include ergonomic design, construction, deployment, self-organization, and project-oriented design.

Numerous works are devoted to various aspects of ICT application. In particular, scholars focus on the use of digital innovative educational technologies to stimulate cognitive activity (Danilova, 2024), as well as on the application of mobile technologies to optimize the learning process and monitor students' academic performance (Ibragimova et al., 2025).

Recent studies further emphasize that the digital transformation of higher education requires not only the adoption of technological infrastructures but also institutional strategies that promote innovation, organizational change, and equitable access to digital learning environments (Narimani, 2026). Likewise, effective online higher education depends on the development of teachers' digital, pedagogical, communicative, and assessment competencies, enabling educators to design, implement, and evaluate meaningful virtual learning experiences (Soria-León & Espinoza-Soria, 2026).

Considerable attention is also given to studies of emotional experiences of educators and students during the COVID-19 pandemic, when education relied heavily on electronic resources. In this context, research findings regarding the use of ICT for developing professional competences in future specialists are particularly important. However, it is clear that students' preparation for the effective use of ICT requires further improvement (Vasileva et al., 2025). Scholars also identify various types of student activities involving electronic resources that contribute to effective professional training (Serebrennikova, 2024).

Particular attention should be paid to studies that explore the essence and distinctive features of virtual educational space design, focusing on its content, advantages and limitations, as well as the principles and formats of its implementation.

Studies are significant for this research as they address the influence of a virtual educational space on personality formation. Scholars have identified a number of problems in the development of the younger generation associated with uncontrolled and unlimited immersion of the individual in the virtual world, emphasizing the need to improve the procedure for implementing ICT in the educational sphere to efficiently resolve conflicts among students.

Research indicates that a virtual educational space is characterized as an environment based on the use of computer technologies that provides participants in the educational process with informational materials through technological tools and content; as a space in which the principal actors are the student, the teacher, the instructional designer, and the technical administrator; and which includes organizational and methodological conditions, as well as a set of technical and software means for the storage, processing, and transmission of information.

The design of a virtual educational space may be implemented in various formats, including:

- Daytime (face-to-face) education (transmission of empirical material through virtual reality within semantic learning);

- Distance learning (teaching conducted entirely via the Internet);

- Blended education (the possibility of remote presence in the classroom and interaction with real participants in the educational process);

- Combined education (a combination of traditional face-to-face instruction and online learning);

- Self-education (independent study using Internet resources).

Scholars identify both advantages and disadvantages of a virtual educational space. Among the advantages are uninterrupted connectivity, time efficiency, cost savings, flexibility, ease of tracking materials and assessment, unlimited access to information, personalization, the ability to independently regulate the pace of learning, visualization, safety, etc. The main disadvantages of a virtual educational space include disorientation in the material, decreased concentration, technological discomfort, lack of emotional contact between individuals, sole reproduction of information available within the computer environment, loss of axiological and existentially significant characteristics of education, radiation exposure, dependence on technical support, the availability of technical devices and Internet connection, the sense of isolation, information overload, lack of mentoring support, and a deficit of practical experience (Ninsiana et al., 2022).

It is worth mentioning that the above-mentioned disadvantages of being in a virtual educational space become particularly acute during a sudden transition from the traditional face-to-face format to distance learning, when all types of educational activities are transferred to the virtual environment, thereby drawing participants into the educational process within virtual reality. An example of such a situation is the urgent introduction of distance learning in educational institutions during the quarantine period caused by the COVID-19 pandemic. The consequences of such disadvantages may include valeological, psychological, and pedagogical problems, accompanied by a high level of mental workload, emotional tension, and a low degree of stress resistance among participants in the educational process.

Stress resistance enables the individual to activate the capacity for social adaptation, maintain interpersonal relationships, ensure successful self-realization, attain goals, and remain productive and healthy. Stress resistance is based on internal and external resources: internal resources of stress resistance include personal, behavioral, physical, and lifestyle-related factors, whereas external resources comprise social support and material resources.

Based on the findings of scientific works (Ramazanova et al., 2021) revealing the specific influence of the digital environment on personality development, we consider it necessary to classify excessive presence in a virtual educational space as a factor affecting the stress resistance of future specialists and to verify this assumption experimentally.

The article aims to investigate and substantiate the excessive influence of a virtual educational space on the stress resistance of future specialists, characterize the design of a real virtual educational space as the planning and creation of a dynamic environment in which the participants can manage educational situations.

The research hypothesis is that excessive presence in a virtual educational space has a negative impact on the stress resistance of future specialists.

MATERIALS AND METHODS

To achieve the research objective, we used both theoretical and empirical methods. Theoretical methods included analysis of the current state of the problem and the generalization of scientific approaches to interpreting the key terms.

The analysis of academic literature allows us to characterize a virtual educational space at the university as an open, dynamic environment for the application of ICT aimed at the effective implementation of professional training. The main components of virtual educational space design in higher education comprise electronic resources; means of electronic communication; and forms of organization of the educational process.

The main forms of organizing the educational process within a virtual educational space at the university include electronic academic courses, independent and project-based work with online information resources, ongoing and semester assessments using ICTs, as well as the creation of video materials and electronic portfolios, computer presentations, consultations, online conferences, webinars, online competitions, workshops, online quests, and online defenses of research projects.

Within the traditional format of education, a virtual educational space at the university functions as a periodic and supplementary component of the educational process. However, in crisis situations (for example, a pandemic), university education may transition entirely into the virtual environment through distance learning, with all types of full-time educational activities being transferred to a virtual educational space.

Therefore, to identify the specific influence of virtual educational space design on students' stress resistance under different conditions, we conducted a comparative analysis of the empirical research results. This analysis concerned the components of students' stress resistance in the process of acquiring professional competences within the traditional (face-to-face) format of education, when a virtual educational space functions as a periodic phenomenon, and within the distance learning format, when the educational process is conducted remotely and a virtual educational space serves as the sole means of implementing educational objectives.

The empirical methods included a survey used to assess the components of stress resistance in future specialists:

- Motivational component (indicator: striving to achieve life goals);
- Emotional component (indicators: emotional stability, anxiety);
- Behavioral component (indicator: adaptability).

The primary research method was a pedagogical experiment conducted among students during the second semester of the 2024-2025 academic year.

At each faculty, one experimental group and one control group were selected. In total, 108 third-year students participated in the study. The experimental (EG) and control (CG) groups were formed on the basis of existing academic cohorts. For two months, students in the EG participated in distance learning with a virtual educational space serving as the main learning environment. Students in the CG continued their education in the traditional format, where a virtual educational space played a supporting and occasional role.

To analyze and compare empirical data on students' stress resistance in the traditional learning format (CG) and the distance learning format (EG), a survey was conducted before and after the completion of the pedagogical experiment.

Validated and reliable diagnostic instruments were used to assess students' stress resistance, including:

- The "Motivation, Achievement Orientation, Social Prestige" (MAS) technique, applied to measure students' striving to achieve their life goals;

- H. Eysenck's emotional stability-instability scale, used to assess emotional stability;

- The Spielberger-Khanin state-trait anxiety inventory, aimed at determining students' levels of situational and trait anxiety;

- The RSM-25 psychological stress scale, used to evaluate students' adaptive capacity.

Statistical data processing was conducted using the SPSS software.

Thus, the experiment was carried out in several stages (Table 1).

Table 1: Stages of conducting the pedagogical experiment.

Stage	Content
Preparatory	Identification of the research relevance, purpose, objectives, object, and subject of the experiment
Organizational	Preparation of methodological support and selection of participants
Practical	Conducting the first (pre-experimental) diagnostic assessment, implementing the pedagogical experiment, and carrying out the second (post-experimental) diagnostic assessment
Generalization	Analysis of the results (comparison of empirical data on students' stress resistance in traditional and distance learning formats)

The results of the pedagogical experiment were further processed using methods of mathematical statistics. The objective was to identify differences in the distribution of a specific variable (level of stress resistance) when comparing two empirical distributions. For this purpose, Pearson's χ^2 test was applied. The measurement scale

included three categories ("high level", "moderate level" and "low level"). Therefore, the number of degrees of freedom was v=2.

The null hypothesis (H_0) stated that there are no differences in the level of stress resistance between the CG and the EG.

The alternative hypothesis (H_1) stated that there are statistically significant differences in the level of stress resistance between the CG and the EG.

RESULTS AND DISCUSSION

The analysis of the first measurement made it possible to identify high, moderate and low levels of stress resistance among students studying in the traditional format (Table 2).

Table 2: Components of students' stress resistance (results of the first measurement, in %).

Components of stress resistance among students	Distribution of students by levels of stress resistance components (in %)					
	High		Moderate		Low	
	EG	CG	EG	CG	EG	CG
Motivational	50.9	47.5	39.7	41.5	9.4	11.0
Emotional	28.9	31.3	56.2	53.7	14.9	14.9
Activity-based	35.1	33.2	59.3	62.8	5.6	4.0
Stress resistance	38.3	37.3	51.7	52.7	29.9	10.0

The results presented in Table 2, reflecting the overall level of students' stress resistance at the first measurement, indicate that the majority of students in both groups demonstrate a moderate level of stress resistance, while slightly more than 10% in each group have a low level.

These findings suggest that within the traditional learning format, supplemented by periodic elements of a virtual educational space, students possess a sufficiently developed level of stress resistance.

The analysis of the second measurement, focusing on the components of stress resistance, determined the level of stress resistance among students within a virtual educational space and compared these results with those of students who continued their education in the traditional format (Table 3).

Table 3: Components of students' stress resistance (results of the second measurement, in %).

Components of stress resistance among students	Distribution of students by levels of stress resistance components (in %)					
	High		Moderate		Low	
	EG	CG	EG	CG	EG	CG
Motivational	24.3	48.5	53.3	40.4	22.4	9.9
Emotional	16.3	33.5	46.8	52.6	36.9	13.8
Activity-based	17.7	35.4	43.9	62.6	38.7	4.0
Stress resistance	19.4	39.1	48.0	51.9	32.7	9.2

The data presented in Table 3 reflect the overall level of stress resistance among EG students at the second measurement: 18.8% demonstrate a high level, 46.9% have a moderate level, and 34.3% possess a low level of stress resistance. These results indicate that under distance learning conditions with unregulated time spent in a virtual educational space, their stress resistance decreased and became insufficient for effectively addressing current tasks.

Statistical analysis using Pearson's χ^2 test has revealed significant differences ($p<0.05$) between the stress resistance indicators obtained at the first and second measurements.

The comparison matrix of the EG and CG distributions by stress resistance level is presented in (Table 4).

Table 4: Matrix of comparative results for the distribution of the study groups based on Pearson's x^2 test.

Groups – assessment stage	CG (I measurement)	CG (II measurement)	EG (I measurement)	EG (II measurement)
CG (I measurement)	-	$\chi2_e = 6.22 < \chi2_c = 9.21$	$\chi2_e = 5.82 < \chi2_c = 9.21$	$\chi2_e = 32.46 > \chi2_c = 9.21$
CG (II measurement)	$\chi2_e = 6.22 < \chi2_c = 9.21$	-	$\chi2_e = 7.21 < \chi2_c = 9.21$	$\chi2_e = 29.12 > \chi2_c = 9.21$

EG (I measurement)	$\chi 2_e = 5.82 < \chi 2_c = 9.21$	$\chi 2_e = 7.21 < \chi 2_c = 9.21$	-	$\chi 2_e = 28.42 > \chi 2_c = 9.21$
EG (II measurement)	$\chi 2_e = 32.46 > \chi 2_c = 9.21$	$\chi 2_e = 29.12 > \chi 2_c = 9.21$	$\chi 2_e = 28.42 > \chi 2_c = 9.21$	-

Note: significance level p=0.05

According to the calculation results, the empirical values of the χ^2 criterion fall within the zone of statistical significance ($p<0.05$). This leads to the rejection of the null hypothesis (H_0) and the acceptance of H_1 for the EG. Thus, the empirical distributions of students in the EG and CG by levels of stress resistance after the completion of the experiment differ from one another.

As shown in Table 3, the number of EG students with a low level of stress resistance at the second measurement increased compared to the first measurement, while the number of EG students with a high level of stress resistance decreased. This indicates corresponding changes in the level of students' stress resistance under different conditions of virtual educational space implementation.

The results obtained clearly indicate the advantages and disadvantages of a virtual educational space, as well as the main causes of changes in students' stress resistance indicators.

When considering the stress resistance indicator "striving to achieve a life goal", it should be noted that this component is determined by social living conditions and is based exclusively on the individual's needs, interests, resources, and opportunities for self-realization, which presuppose stability and certainty in the future. However, under conditions of isolation, an individual may develop a sense of fear regarding the future, which undermines any prospects and plans. Consequently, the life goal becomes more temporally distant. Such experiences are particularly pronounced in less flexible individuals, who gradually adapt to external living conditions. Accordingly, the results of the study of the motivational component among EG students at the second measurement differ significantly from both the first measurement and the corresponding indicator among CG students.

Prolonged immersion in a virtual educational space, particularly when real-life educational challenges cannot serve as an alternative, contributes to a decline in emotional stability (Matayev et al., 2021). This component of stress resistance reflects the ability to understand one's own emotions, recognize the feelings of others, and regulate one's emotional state. Not all students have continuous access to information resources due to insufficient technical equipment, and not all possess advanced ICT skills. Only a small proportion demonstrates the self-discipline necessary for effective independent learning. These limitations are often accompanied by emotional tension, anxiety, and the emergence of negative emotional experiences. In addition, the professional training of future specialists requires the development of practical skills and language proficiency, both of which may be limited within a virtual educational space. As a result, students may become concerned about the level of their professional competence development. This explains why the emotional component of stress resistance among EG students at the second measurement was lower than at the first measurement and lower than that of CG students.

It is worth mentioning that the decline in the behavioral component of stress resistance among EG students at the second measurement is attributable to changes in living and learning conditions. The speed at which adaptive skills develop depends on individual psychological characteristics and prior experience in a new environment. Therefore, it is unrealistic to expect students to rapidly and harmoniously adapt to sustained engagement in a virtual educational space. Excessive immersion in virtual reality affects both the psychological and physical well-being of students. Adjusting to such changes requires time, and adaptation does not occur immediately.

Overall, the findings indicate that students demonstrate higher levels of stress resistance in the traditional learning format than those acquiring their specialization under conditions of excessive immersion in a virtual educational space.

Today, a virtual educational space is no longer an abstract concept; it is becoming a reality that shapes not only the personal development of future specialists but also compels educational institutions to seek new solutions (Abdullayev et al., 2024). One such solution may be teaching within a real virtual educational space, whose design integrates real and virtual learning environments and enables each participant in the educational process to engage in the creation of an open educational space (Vassilchenko, 2024). A defining feature of this environment is the ability of its participants to manage educational situations. A real virtual educational space represents an organized form of educational practice focused on constructive interaction and the active participation of both teachers and students (Vaslavskiy & Gabuev, 2017). At the same time, it is dynamic and adaptable, requiring participants to draw on diverse experiences and to create varied learning situations. A real virtual educational space focuses on the potential and resource capacities

of its participants and highlights the role of different educational contexts, thereby transforming both thinking and activity (Afanasyev & Karpova, 2024). Within a real virtual educational space, when mastering professional content, students independently choose the time and place for entering a virtual learning environment prepared by the instructor. This environment may include video lectures, audio materials, presentations, practical tasks, online and offline communication channels, and assessment tools. Students can adjust the pace and sequence of learning, revisit specific segments, and regulate the scope and order of material use. Key conditions for effective implementation include strong student motivation, the rational organization of academic, research, and socio-humanitarian activities, the appropriate selection of methods, forms, and tools for developing professional competences, adequate technical equipment of classrooms, sufficient informational and resource support, and instructors' ability to design digital content, author texts, develop scripts, perform presentational roles, and carry out video and web editing (Zaitseva, 2021). Under such conditions, students' stress resistance in the process of developing professional competences can evolve steadily, gradually, and organically (Yessengulova, et al., 2026).

In light of the above, the following recommendations for designing a real virtual educational space to foster students' stress resistance can be proposed:

- Enrich extracurricular activities with scientific and cultural events, competitions, conferences, and focus groups conducted in the real environment, while also incorporating social media communication, online quests, surveys, forums, webinars, and virtual exhibitions;

- Ensure the systematic moderation of a virtual educational space through a clearly structured algorithm for implementing the educational process. This includes regular monitoring of students' activity on designated online platforms, careful selection of educational materials aligned with students' needs, continuous access to the resources of a virtual educational space, and timely support in overcoming difficulties related to the use of digital tools;

- Integrate virtual experience into students' real life by promoting meaningful socialization in the digital environment. This involves mastering norms, values, and appropriate behavior within online communities, as well as thoughtfully incorporating the virtual dimension into the everyday lives of young people;

- Ensure access to modern information technologies and devices, as well as stable Internet connectivity in any location for all participants in the educational process, enabling them to perform educational tasks effectively;

- Provide mentoring support in the completion of academic tasks that involve the use of ICTs;

- Organize the educational process within a real virtual educational space in accordance with a work-life balance, students' workload and the circadian rhythms of their physiological functions.

CONCLUSIONS

This study allows to clarify the key concepts of the research: a "virtual educational space" is defined as an environment based on the use of computer technologies that provides participants in the educational process with informational materials through technological tools and content; a virtual educational space at the university is considered as an open, dynamic environment for the application of ICT aimed at the effective implementation of professional training; a "real virtual educational space" is characterized as the integration of real and virtual educational environments, enabling each participant in the educational process to become part of research focused on organizing an open educational space.

The study empirically demonstrated that the traditional (face-to-face) format of the educational environment containing elements of a virtual educational space has an impact on students' emotional stability during professional training. Under such conditions, students show positive intentions to achieve life goals, are prepared for various changes, confidently solve professionally oriented tasks, readily adapt to diverse life circumstances, and gradually master modern ICTs. At the same time, the excessive immersion of students in a virtual educational space has proved that the level of students' stress resistance decreased significantly.

Further research should address the theoretical and methodological foundations of designing a real virtual educational space and conceptual approaches to its creation under modern educational conditions.

The limitations of the study include the sample size and the age composition of the participants in the pedagogical experiment.

REFERENCES

Abdullayev, I., Kupriyanova, A., Stepanova, D., Rybakov, A., Galkin, A., & Malchukova, N. (2024). Reducing social inequality and improving access to education: Features of international legal regulation. ***Revista Jurídica,*** ***3***(79), 622–637. https://revista.unicuritiba.edu.br/index.php/RevJur/article/view/7514/pdf

Afanasyev, V. V., & Karpova, A. I. (2024). Engineering thinking in the structure of professional training of students of technical universities: Components, approaches and methods of development. ***Anthropological Didactics and Upbringing, 7***(3), 35–47. https://science-book.ru/wp-content/uploads/2024-3.pdf

Akhmetshin, E., Makushkin, S., Abdullayev, I., Yumashev, A., Kozachek, A., Shichiyakh, R., & Shakhov, D. (2024). Opportunities to increase the efficiency of universities' research and innovation activities: Scientometric evaluation of researchers' work under external information constraints. ***Qubahan Academic Journal, 4***(1), 240–249. https://doi.org/10.48161/qaj.v4n1a258

Danilova, S. D. (2024). A project-based approach to managing the interaction of digital university stakeholders. ***Economic Problems and Legal Practice, 20***(2), 297–302. https://doi.org/10.33693/2541-8025-2024-20-2-297-302

Ibragimova, E., Uraimov, S., Baitassov, Y., Yuldasheva, S., & Kutlimuratova, D. (2025). Digital motivation: Fitness apps and student physical activity. ***Retos, 67***, 1162–1173. https://doi.org/10.47197/retos.v67.113635

Matayev, B., Shalgynbayeva, K., Sarsenbayeva, B., Karas, K., & Kolyukh, O. (2021). The self-concept of students: Scientific bases and features of research. ***Cypriot Journal of Educational Sciences, 16***(6), 3184–3195. https://doi.org/10.18844/cjes.v16i6.6532

Mirzoyan, M. E. (2023). Legal education: The idea of continuity. ***Lobbying in the Legislative Process, 2***(3), 9–12. https://doi.org/10.33693/2782-7372-2023-2-3-9-12

Narimani, M. (2026). Digital transformation in higher education: Challenges and opportunities. ***Sophia Research Review, 3***(2), 48–55. https://doi.org/10.64092/rvvkw007

Ninsiana, W., Gabidullina, F. I., Widodo, M., Patra, I., Pallathadka, H., Alkhateeb, D., Zainal, A. G., & Gheisari, A. (2022). High school students' attitudes towards e-learning and impacts of online instruction on their general English learning: Challenges and issues. ***Education Research International, 2022***, Article 9103862. https://doi.org/10.1155/2022/9103862

Popandopulo, A., Kudysheva, A., Kudarova, N., Matayev, B., & Antikeyeva, S. (2025). Effectiveness of an author's program for psycho-pedagogical support in the development of metacognitive abilities. ***International Journal of Evaluation and Research in Education, 14***(2), 1183–1195. https://doi.org/10.11591/ijere.v14i2.30526

Ramazanova, D., Togaibayeva, A., Suguraliyeva, A., Zhubatyrova, B., Biissova, G., & Bukhaeva, A. (2021). Formation of an educational technology culture for future teachers in the university. ***World Journal on Educational Technology: Current Issues, 13***(3), 428–436. https://doi.org/10.18844/wjet.v13i3.5951

Serebrennikova, A. V. (2024). Improving legal education in the age of digitalization. ***Gaps in Russian Legislation, 17***(7), 90–97. https://doi.org/10.33693/2072-3164-2024-17-7-090-097

Soria-León, N. G., & Espinoza-Soria, M. J. (2026). ***Competencias docentes para la educación en línea en el nivel superior***. Sophia Editions.

Stepanova, D., Baibosunova, G., Glazunova, A., Kamalova, L., Baksheev, A., & Shichiyakh, R. (2025). Supporting natural ecosystems: The role of integrating student environmental volunteering and business corporations. ***International Journal of Ecosystems and Ecology Science, 15***(5), 35–42. https://doi.org/10.31407/ijees15.505

Vasileva, A., Troitskaya, T., Dronova, S., Muravyov, K., Matkarimov, A., & Tatlyev, R. (2025). Environmental education as a key factor in achieving sustainable development goals: Challenges and prospects. ***International Journal of Ecosystems and Ecology Science, 15***(3), 301–308. https://doi.org/10.31407/ijees15.334

Vaslavskiy, Y. I., & Gabuev, S. V. (2017). Global trends in electronic governance: Cases of the U.S., China and Russia. ***Mezhdunarodnye Processy, 15***(1[48]), 108–125. https://doi.org/10.17994/IT.2017.15.1.48.9

Vassilchenko, N. V. (2024). Social partnership in education as a subject of legal relationship. ***Gaps in Russian Legislation, 17***(7), 72–78. https://doi.org/10.33693/2072-3164-2024-17-7-072-078

Yessengulova, M., Ramazanova, D., Togaibayeva, A., Kaztayeva, A., Turganbayeva, B., Sultanbayeva, L., & Abilyasheva, A. (2026). Impact of pedagogical management training program on students' professional competencies and management abilities development: Case of Kazakhstan. ***Qubahan Academic Journal, 6***(1), 135–145. https://doi.org/10.48161/qaj.v6n1a2019

Zaitseva, A. S. (2021). Modern professional language of robotics (terminological family «robot»). ***Nauchnyi Dialog, 5***, 96–114. https://doi.org/10.24224/2227-1295-2021-5-96-114

Zharova, A. K. (2024). Classifiers of destructive impacts in digital space. ***Gaps in Russian Legislation, 17***(6), 28–32. https://doi.org/10.33693/2072-3164-2024-17-6-028-032