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DE LOS FINES Y PROPÓSITOS DE EDUWEB, REVISTA DE TECNOLOGÍA DE INFORMACIÓN Y COMUNICACIÓN EN EDUCACIÓN

Eduweb, la revista de Tecnología de Información y Comunicación en Educación, es una publicación de carácter nacional e internacional de divulgación del conocimiento, del uso, aplicación y experiencias de las Tecnologías de la Información y Comunicación (TIC) en ambientes educativos. Con la revista se pretende divulgar las innovaciones que en materia de TIC están siendo implementadas y ensayadas en los diferentes niveles y modalidades del sistema educativo venezolano e iberoamericano. De igual manera contribuir a proyectar las experiencias de estudiantes de pre y postgrado, docentes, investigadores y especialistas en TIC en educación en la Universidad de Carabobo y en otras universidades de Venezuela y de otros países de Iberoamérica. Es una revista arbitrada e indexada adscrita al programa de la especialización en Tecnología de la Computación en Educación, de la Facultad de Ciencias de la Educación de la Universidad de Carabobo, registrada bajo el ISSN 1856-7576. Editada en formato impreso y digital.

Visión

Ser un espacio académico-científico de difusión y divulgación de las distintas tendencias del pensamiento universal ubicadas en el área de TIC en ambientes educativos, con altos niveles de calidad académica.

Misión

Promover y facilitar la difusión y divulgación de los productos de las investigaciones y experiencias de los docentes e investigadores de la Universidad de Carabobo y otras universidades del país y del mundo en el área de TIC en ambientes educativos; motivar la participación en redes comunes de información y publicación nacional e internacional; coordinar esfuerzos y velar por la calidad de las publicaciones a fin de procurar elevar el nivel académico del personal docente y de investigación mediante el desarrollo de trabajos de investigación como función esencial en su crecimiento académico.

Objetivos

Servir como órgano de divulgación de las TIC y su influencia en ambientes educativos. Estimular la producción intelectual no solo en los docentes e investigadores de la Universidad de Carabobo, sino también en otros centros de educación e investigación nacional e internacional.

Propiciar el intercambio cultural, académico, científico y tecnológico con otros centros de educación superior en Venezuela y el mundo.

EDITORIAL

La Revista Eduweb se complace en presentar su Volumen 17 Nro. 4 con el que cierra un año 2023 pleno de júbilo por cumplir con su gran objetivo como ente divulgativo. Los trabajos están a disposición de los lectores tras un proceso investigativo y de revisión por el que atraviesan sus investigadores con el propósito de dar a conocer por primera vez sus hallazgos.

A continuación, los temas que integran el presente número. Así tenemos, La inteligencia artificial en el sistema educativo, en el que se analizan las implicaciones de la inteligencia artificial (IA) en el sistema educativo venezolano. Otra lectura que pueden disfrutar: Efectos cuantitativos del uso de TIC en el rendimiento académico de estudiantes universitarios cuyo diseño fue de carácter cuantitativo. Desde la República Dominicana leeremos: Estudiantes versus docentes: la percepción de dominio de las competencias digitales en una institución de educación superior. Otro artículo producto de la integración investigativa entre México y República Dominicana resaltan la importancia de las Competencias digitales en administrativos de un instituto politécnico. Un siguiente trabajo desde Honduras presenta: Competencias gerenciales en toma de decisiones financieras de las pequeñas y medianas empresas. Otro trabajo se centró en estudiar los Efectos de laboratorios virtuales en competencias procedimentales de ciencias naturales de estudiantes de octavo grado. En un análisis de tres conceptos sus investigadores profundizan en: La calidad de la escuela en discusión: implementación tecnológica y escolarización inclusiva, dos caras de la misma moneda. Un grupo de estudios analiza: El papel de la educación a distancia en la formación de especialistas, en el que concluyen como requisito para la educación a distancia la garantía de su eficacia. El siguiente trabajo se orientó al estudio de: Perspectivas del uso de la inteligencia artificial en la jurisprudencia: del proceso educativo a la práctica jurídica en el que dejan evidencia de la importancia de la IA para recopilar y analizar una gran cantidad de contenido legal. Así también, la presentación actualizada de: Adaptación de estudiantes desplazados internamente a nuevos entornos de aprendizaje mediante métodos innovadores de formación docente abierta en perspectivas de guerra. Se suma un modelo de trabajo en cuanto a los medios de influencia en el desarrollo y mejora de las habilidades de pensamiento crítico y la integridad académica entre los estudiantes de filología, esto a través del artículo titulado: Principios del desarrollo de la integridad académica y el pensamiento crítico en estudiantes de filología. Más adelante se podrá leer lo que resulta de una reflexión y análisis acerca de: Filosofía e Inteligencia Artificial, una perspectiva ética/teleológica. Pasamos a otra investigación en la que por medio de encuestas declaran especial importancia a los fundamentos teóricos en la: Formación profesional de los futuros especialistas en cultura física y deporte en la sociedad de la información. Compone este abanico de investigaciones la: Experiencia extranjera en aseguramiento de la calidad dentro del espacio innovador de la educación superior, este equipo resalta la importancia de la integridad académica desde lo moral y lo ético. Por su parte, un equipo investigativo se enfocó en el estudio de temas problemáticos en la implementación de la IA en la educación jurídica y procesal civil. Otro artículo presenta: Posibilidades de uso de tecnologías inteligentes en el sistema de educación superior para la formación de especialistas de alta calidad, la lectura de este trabajo lo llevará a reflexionar sobre el concepto de Educación Inteligente. Una temática innovadora se puede consultar en la lectura: El impacto de estudiar el curso de seguridad de la vida con los fundamentos de la protección laboral en la resistencia de los futuros maestros, cuyo objetivo central fue determinar el impacto de estudiar el curso de Seguridad de Vida sobre la base de conceptos básicos de protección laboral en la fortaleza de los futuros maestros. El recorrido lector conduce a: La eficacia del método de proyectos en la enseñanza de disciplinas humanitarias cuyo objetivo se centró en identificar la efectividad del método de proyectos. Un antepenúltimo artículo propone cuatro mecanismos

de aprendizaje mediante el título: Mejorar las competencias profesionales de los futuros docentes mediante la práctica en las escuelas. Finalmente, cierra este número el trabajo titulado: El papel del aprendizaje basado en proyectos en la formación de futuros funcionarios.

Apreciados lectores, los esperamos en nuestro próximo número del venidero año 2024.

Elsy Medina
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La inteligencia artificial en el sistema educativo venezolano: oportunidades y amenazas

Artificial intelligence in the venezuelan educational system: opportunities and threats

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Resumen

Este artículo tiene como objetivo analizar las implicaciones de la inteligencia artificial (IA) en el sistema educativo venezolano, desde una perspectiva crítica y reflexiva. La IA es una disciplina que busca crear sistemas capaces de realizar tareas que normalmente requieren inteligencia humana, como el aprendizaje, el razonamiento o la creatividad. La IA tiene un gran potencial para transformar el sistema educativo venezolano, ofreciendo oportunidades para mejorar la calidad, la equidad y la eficiencia de la educación. Sin embargo, también plantea amenazas y desafíos que deben ser considerados y afrontados con responsabilidad y ética. Para realizar este análisis, se ha utilizado una metodología documental basada en la revisión de fuentes bibliográficas relevantes sobre el tema. El artículo se estructura en tres segmentos: La IA y las tendencias educativas en Venezuela, Oportunidades y amenazas de la IA para el proceso de formación estudiantil y el Aprovechamiento de la IA en los procesos de la educación básica. El artículo concluye que la IA puede ser una aliada o una enemiga de la educación, dependiendo del uso que se le dé y del fin que se persiga. Por ello, es necesario educar para la IA y con la IA, con una visión crítica, ética y humanista.

Palabras clave: Amenazas, educación, inteligencia artificial, oportunidades, Venezuela.

Abstract

This article aims to analyze the implications of artificial intelligence (AI) in the Venezuelan educational system, from a critical and reflective perspective. AI is a discipline that seeks to create systems capable of performing tasks that normally require human intelligence, such as learning, reasoning, or creativity. AI has great potential to transform the Venezuelan education system, offering opportunities to improve the quality, equity, and efficiency of education. However, it also poses threats and challenges that must be considered and faced responsibly and ethically. To carry out this analysis, a documentary methodology based on the review of relevant bibliographic sources on the subject has been used. The article is structured in three segments: AI and educational trends in Venezuela, Opportunities, and threats of AI for the student training process and the use of AI in basic education processes. The article concludes that AI can be an ally or an enemy of education, depending on the use it is put to, and the purpose pursued. For this reason, it is necessary to educate about AI and AI, with a critical, ethical, and humanistic vision.

Keywords: artificial intelligence, education, opportunities, threats, Venezuela.



1. Introducción

La educación es un derecho humano fundamental y un factor clave para el desarrollo social, económico y cultural de un país. Sin embargo, el sistema educativo venezolano atraviesa una profunda crisis que afecta a todos los niveles y modalidades de enseñanza. Según el informe del Observatorio Educativo de Venezuela (2022), la educación venezolana se caracteriza por una baja cobertura, una alta deserción, una deficiente infraestructura, una escasez de recursos humanos y materiales, una baja calidad pedagógica, una falta de evaluación y acreditación, una desarticulación entre los diferentes subsistemas y una escasa articulación con el sector productivo. Ante este panorama, surge la necesidad de buscar alternativas innovadoras que permitan superar las limitaciones y los problemas del sistema educativo venezolano. Una de estas alternativas es la Inteligencia Artificial (IA), que se define como "la ciencia e ingeniería de crear sistemas inteligentes" (Russell & Norvig, 2020). La IA tiene un gran potencial para transformar el sistema educativo venezolano, ofreciendo oportunidades para mejorar la calidad, la equidad y la eficiencia de la educación. Sin embargo, también plantea amenazas y desafíos que deben ser considerados y afrontados con responsabilidad y ética. El objetivo de este artículo es analizar las implicaciones de la IA en el sistema educativo venezolano, desde una perspectiva crítica y reflexiva. Para ello, se ha utilizado una metodología documental basada en la revisión de fuentes bibliográficas relevantes sobre el tema. El artículo se estructura en tres segmentos: La IA y las tendencias educativas en Venezuela, Oportunidades y amenazas de la IA para el proceso de formación estudiantil y Aprovechamiento de la IA en los procesos de la educación básica. Es relevante y original porque aborda un tema de actualidad y de interés para el ámbito educativo venezolano, así como para el público en general, ya que ofrece una visión crítica y reflexiva sobre el uso y el impacto de la IA en el sistema educativo venezolano, considerando sus ventajas y sus riesgos.

2. La inteligencia artificial y las tendencias educativas en Venezuela. Revisión de la literatura

La IA es una disciplina que busca crear sistemas capaces de realizar tareas que normalmente requieren inteligencia humana, como el aprendizaje, el razonamiento o la creatividad. Esta se basa en diversas ramas del conocimiento, como la informática, la matemática, la lógica, la psicología o la lingüística. La IA se puede clasificar en dos tipos: débil o fuerte. Una IA débil se refiere a sistemas que pueden realizar tareas específicas dentro de un dominio determinado, como reconocer rostros o traducir textos. Por otro lado, la IA fuerte se refiere a sistemas que pueden igualar o superar la inteligencia humana general, es decir, que pueden comprender y razonar sobre cualquier tema (Searle, 1980). Es así como la IA ha experimentado un gran avance en las últimas décadas gracias al desarrollo tecnológico, especialmente en el campo del procesamiento masivo de datos (*big data*), el aprendizaje automático (*machine Learning*) y las redes neuronales artificiales (*Deep Learning*). Estas tecnologías permiten crear sistemas cada vez más sofisticados e inteligentes que pueden aprender por sí mismos a partir de grandes cantidades de información. Esta tecnología emergente tiene múltiples aplicaciones en diversos ámbitos de la sociedad, como la salud, la economía, la seguridad, el entretenimiento o la educación. En el campo educativo, la IA ofrece oportunidades para mejorar la calidad, la equidad y la eficiencia de la educación, tanto en los procesos de enseñanza-aprendizaje, como en la gestión y la evaluación educativa. Según Luckin et al., (2016), algunas de las ventajas que puede aportar la IA al sistema educativo son las siguientes:

- **Personalización:** La IA puede adaptar el contenido, el ritmo y el estilo de enseñanza a las características, necesidades e intereses de cada estudiante, ofreciendo una educación más individualizada y centrada en el aprendiz.
- **Retroalimentación:** La IA puede proporcionar una retroalimentación inmediata y personalizada a los estudiantes y a los docentes sobre el proceso y el resultado del aprendizaje, facilitando la identificación de fortalezas y debilidades, así como la toma de decisiones para mejorar el rendimiento académico.
- **Colaboración:** La IA puede fomentar el aprendizaje colaborativo entre los estudiantes y entre los docentes, creando espacios virtuales de interacción y cooperación, así como facilitando el acceso a recursos y expertos de diferentes lugares y contextos.

- **Motivación:** La IA puede aumentar la motivación y el compromiso de los estudiantes con el aprendizaje, utilizando elementos lúdicos, gamificados e inmersivos, así como ofreciendo recompensas y reconocimientos por sus logros.
- **Innovación:** La IA puede estimular la creatividad y el pensamiento crítico de los estudiantes y de los docentes, planteando problemas complejos y desafíos que requieren soluciones originales e innovadoras.

Estas ventajas se pueden concretar en diversas aplicaciones de la Inteligencia Artificial en el sistema educativo venezolano. A continuación, se presentan algunos ejemplos de estas:

- **Sistema Nacional de Ingreso Universitario (SNIU):** Es un sistema que utiliza algoritmos de IA para asignar cupos universitarios a los estudiantes que culminan la educación media. El sistema toma en cuenta variables como el rendimiento académico, las preferencias vocacionales y las condiciones socioeconómicas de los estudiantes. El sistema busca garantizar una mayor equidad y transparencia en el acceso a la educación superior (Ministerio del Poder Popular para Educación Universitaria Ciencia y Tecnología [MPPEUCT], 2021).
- **Plataforma Patria:** Es una plataforma que utiliza algoritmos de IA para gestionar diversos programas sociales del gobierno venezolano. Entre estos programas se encuentra el Sistema Nacional Integral Hogares de la Patria (SNHP), que otorga beneficios económicos a las familias venezolanas según su nivel de vulnerabilidad. El sistema utiliza algoritmos de IA para identificar a las familias beneficiarias y para verificar su situación socioeconómica (Plataforma Patria, 2021).
- **Proyecto Canaima Educativo:** Es un proyecto que utiliza algoritmos de IA para proveer recursos digitales a los estudiantes y docentes venezolanos. El proyecto consiste en distribuir computadoras portátiles con software educativo a los estudiantes de educación básica y en capacitar a los docentes en el uso de las tecnologías de la información y la comunicación (TIC). El software educativo utiliza algoritmos de IA para adaptar el contenido y el *feedback* a las características y al progreso de cada estudiante (Fundación Canaima, 2021).

Estas aplicaciones de la IA en el sistema educativo venezolano muestran cómo esta tecnología puede mejorar los procesos de enseñanza-aprendizaje, así como la gestión y la evaluación educativa. Sin embargo, estas aplicaciones también presentan limitaciones y riesgos que deben ser considerados y afrontados con responsabilidad y ética. Estos aspectos se analizarán en el siguiente segmento.

Oportunidades y amenazas de la Inteligencia artificial para el proceso de formación estudiantil

La Inteligencia Artificial no solo puede mejorar los procesos de enseñanza-aprendizaje en la educación básica venezolana, sino también; influir en el proceso de formación estudiantil. La formación estudiantil se refiere al conjunto de competencias, valores y actitudes que los estudiantes deben desarrollar para su inserción social, laboral y ciudadana. La formación estudiantil se basa en el enfoque por competencias, que implica la integración de conocimientos, habilidades y actitudes para resolver problemas reales y complejos (Tobón et al., 2010). La IA puede ofrecer oportunidades para el desarrollo de competencias clave para el siglo XXI, como la comunicación, la colaboración, el pensamiento crítico, la creatividad o la resolución de problemas. Estas competencias son esenciales para afrontar los retos y las demandas de una sociedad cada vez más globalizada, digitalizada y cambiante. La IA puede facilitar el desarrollo de estas competencias mediante el uso de herramientas y recursos que estimulen el aprendizaje activo, autónomo y colaborativo de los estudiantes. Sin embargo, la IA también puede plantear amenazas para el proceso de formación estudiantil. Según Bostrom, (2014), algunas de estas amenazas son las siguientes:

- **Deshumanización:** La IA puede reducir el contacto humano entre los estudiantes y los docentes, así como entre los propios estudiantes, generando una pérdida de valores como la empatía, la solidaridad o la tolerancia.

- **Dependencia:** La IA puede crear una dependencia excesiva de los estudiantes hacia los sistemas inteligentes, disminuyendo su capacidad de pensamiento propio, de iniciativa o de responsabilidad.
- **Discriminación:** La IA puede generar sesgos o prejuicios en los sistemas inteligentes, afectando a la equidad y a la diversidad del sistema educativo. Estos sesgos o prejuicios pueden provenir de los datos utilizados para entrenar a los sistemas inteligentes o de las decisiones tomadas por los mismos.
- **Desempleo:** La IA puede provocar una sustitución o una obsolescencia de las profesiones humanas por las máquinas inteligentes, afectando al futuro laboral y profesional de los estudiantes.

Estas amenazas requieren de una reflexión crítica y ética sobre el uso y el impacto de la IA en el sistema educativo venezolano. Asimismo, requieren de una formación ciudadana que prepare a los estudiantes para convivir con la IA de forma responsable y consciente.

3. Metodología

La metodología documental empleada en este artículo se basa en la revisión crítica y sistemática de fuentes bibliográficas pertinentes y actualizadas sobre la inteligencia artificial y su incidencia en el sistema educativo venezolano. Se han consultado diversas bases de datos académicas, revistas científicas, libros, informes y documentos oficiales, tanto nacionales como internacionales, que abordan el tema desde diferentes perspectivas y enfoques. Se han aplicado criterios de calidad, rigor y relevancia para seleccionar las fuentes más adecuadas para el análisis del fenómeno de estudio. A partir de la información recopilada, se ha realizado un análisis cualitativo y reflexivo, identificando las principales tendencias, oportunidades y amenazas que plantea la inteligencia artificial para la educación en Venezuela. Para garantizar el rigor metodológico y la calidad investigativa, se han seguido los criterios propuestos por diversos autores, tales como: la credibilidad, que se refiere al grado de correspondencia entre los datos obtenidos y la realidad estudiada; la auditabilidad o confirmabilidad, que se refiere a la posibilidad de verificar el proceso de investigación y los resultados obtenidos; y la transferibilidad o aplicabilidad, que se refiere a la posibilidad de aplicar los hallazgos a otros contextos o situaciones similares. Estos criterios se han aplicado mediante diversas estrategias, como la triangulación de fuentes, la reflexividad del investigador, la descripción detallada del contexto y el método, y la contrastación de los resultados con otros estudios.

4. Discusión. Aprovechamiento de la Inteligencia artificial en los procesos de la Educación Básica

La educación básica es una etapa fundamental en el desarrollo de las personas, ya que les proporciona los conocimientos y las competencias necesarias para su vida personal, social y profesional. La educación básica también contribuye al desarrollo sostenible, al fomentar valores como la paz, la democracia, la diversidad y la ciudadanía global. En este contexto, la IA puede ofrecer múltiples beneficios para mejorar los procesos de la educación básica, tanto en el ámbito pedagógico como en el administrativo. Sin embargo, como se expresó anteriormente, también implica ciertos riesgos y desafíos que deben ser considerados y regulados para garantizar una aplicación ética y responsable de esta tecnología. Uno de los usos más comunes de la IA en la educación básica, es la creación de tutores virtuales. Estos son sistemas que pueden interactuar con los estudiantes a través de diferentes medios, como texto, voz o imagen, y ofrecerles orientación, apoyo y retroalimentación personalizada durante su proceso de aprendizaje. Los tutores virtuales pueden facilitar la labor docente, al complementar o sustituir su intervención en algunos casos, y mejorar la calidad y la equidad de la educación, al adaptarse a las necesidades y preferencias de cada estudiante. Según Redem (2020):

...numerosas instituciones educativas han creado sus propios tutores virtuales para facilitar la labor docente. Estos sistemas pueden resolver dudas específicas sobre una materia determinada o incluso diseñar planes de estudio personalizados para cada alumno (párr. 2).

Otro uso posible de la IA en la educación básica es la identificación de nuevos temas de estudio. Los

docentes pueden apoyarse en la IA para diseñar sus programas de estudio, al utilizar sistemas que pueden analizar grandes cantidades de información y detectar las tendencias, las demandas y las necesidades del mercado laboral y de la sociedad. De esta forma, los docentes pueden actualizar sus contenidos y metodologías para preparar a los estudiantes para los desafíos del siglo XXI.

Como señala Redem (2020):

...los docentes pueden apoyarse en la IA para diseñar sus programas de estudio. Estos sistemas pueden analizar datos sobre las habilidades más demandadas por las empresas o las problemáticas sociales más relevantes y sugerir temas que se ajusten a estos criterios (párr. 3).

Un tercer uso potencial de la IA en la educación básica es la mejora en las acciones de marketing educativo. La IA permite crear sistemas que pueden segmentar y perfilar a los potenciales estudiantes, así como personalizar los mensajes y las ofertas que se les envían. Esto puede aumentar el interés y la captación de los estudiantes, así como su fidelización y satisfacción con el servicio educativo.

De acuerdo con Redem (2020):

...la IA también puede mejorar las acciones de marketing educativo al permitir una comunicación más efectiva con los potenciales estudiantes. Estos sistemas pueden recopilar y analizar datos sobre sus características, intereses y comportamientos y enviarles mensajes personalizados que se adapten a sus necesidades y expectativas (párr. 4).

Un cuarto uso prometedor de la IA en la educación básica es la implementación de los campus inteligentes. La IA permite crear plataformas digitales que facilitan la interacción entre los estudiantes y los objetos inteligentes de sus campus físicos, como sensores, cámaras, pantallas o dispositivos móviles. Estas plataformas pueden mejorar la experiencia de aprendizaje, al ofrecer servicios personalizados, contextuales y colaborativos, así como optimizar la gestión de los recursos, la seguridad y el cuidado del medio ambiente. A este respecto Nobbot (2019) expresa que "la idea es que los estudiantes puedan interactuar con los objetos inteligentes de sus campus físicos para mejorar su experiencia de aprendizaje. Por ejemplo, podrían acceder a información relevante sobre una asignatura mediante el escaneo de un código QR, reservar una sala de estudio mediante una aplicación móvil o recibir alertas sobre eventos o actividades de su interés" (párr. 6).

Los usos referidos podrían causar furor entre quienes ven en la Inteligencia Artificial, el futuro del desarrollo de la educación básica eficiente y competitiva frente a un mundo cada vez más globalizado y exigente, pero antes, hay que detenerse a resaltar lo positivo y negativo de la aplicación de la IA a los procesos educativos.

Entre los efectos positivos más relevantes se pueden mencionar:

- Mejorar la calidad y la equidad de la educación, al ofrecer oportunidades de aprendizaje personalizado, flexible y adaptativo, para todos los estudiantes, independientemente de su ubicación, nivel socioeconómico o capacidades.
- Fomentar el desarrollo de competencias del siglo XXI, como el pensamiento crítico, la creatividad, la comunicación y la colaboración, al estimular el uso de tecnologías innovadoras y el aprendizaje basado en proyectos y problemas.
- Potenciar la investigación y la innovación, al facilitar el acceso a fuentes de información actualizadas y relevantes, así como a herramientas de análisis y visualización de datos que permiten generar nuevos conocimientos y soluciones.

Algunos de los efectos negativos son:

- Generar desigualdades y brechas digitales, al excluir o marginar a aquellos estudiantes que no tienen acceso a las tecnologías de la IA o que no cuentan con las competencias digitales necesarias para aprovecharlas.
- Provocar sesgos y discriminaciones, al reproducir o amplificar los prejuicios existentes en los datos o en los algoritmos que alimentan a los sistemas de la IA, lo que puede afectar a las decisiones o recomendaciones que estos sistemas ofrecen.
- Reducir la autonomía y la privacidad, al someter a los estudiantes a una vigilancia constante y a una manipulación potencial por parte de los sistemas de la IA, que pueden recopilar y utilizar sus datos personales sin su consentimiento o conocimiento.

5. Conclusiones

La IA es una disciplina que busca crear sistemas capaces de realizar tareas que normalmente requieren inteligencia humana. La IA tiene un gran potencial para transformar el sistema educativo venezolano, ofreciendo oportunidades para mejorar la calidad, la equidad y la eficiencia de la educación. Sin embargo, también plantea amenazas y desafíos que deben ser considerados y afrontados con responsabilidad y ética. El artículo ha concluido que la IA puede ser una aliada o una enemiga de la educación, dependiendo del uso que se le dé y del fin que se le persiga. Por ello, es necesario educar para la IA y con la IA, con una visión crítica, ética y humanista. La IA es una tecnología que puede tener un gran impacto en los procesos de la educación básica, tanto en el ámbito pedagógico como en el administrativo. Esta puede ofrecer beneficios como el acceso a la información, la personalización del aprendizaje, la evaluación de los estudiantes, la formación de los docentes y la implementación de los campus inteligentes. Sin embargo, también implica riesgos como las desigualdades, los sesgos, la dependencia tecnológica y la pérdida de autonomía. Para aprovechar las oportunidades y mitigar los desafíos que plantea la IA en la educación básica, es necesario adoptar un enfoque ético y responsable que garantice el respeto a los derechos humanos y a los principios de inclusión y equidad. Asimismo, es necesario contar con políticas públicas que regulen el uso y el desarrollo de la IA en el ámbito educativo, así como con estrategias pedagógicas que promuevan el desarrollo de competencias digitales y ciudadanas en los estudiantes. Como principales hallazgos y aportes del artículo, se pueden destacar:

- La identificación y descripción de las ventajas que puede ofrecer la IA al sistema educativo venezolano, tanto en los procesos de enseñanza-aprendizaje como en la gestión y la evaluación educativa.
- La presentación y análisis de algunos ejemplos de aplicaciones de la IA en el sistema educativo venezolano, mostrando cómo esta tecnología puede mejorar la calidad, la equidad y la eficiencia de la educación.
- La reflexión y discusión sobre las amenazas y desafíos que plantea la IA para el proceso de formación estudiantil, considerando sus implicaciones éticas, sociales y laborales.
- Los efectos positivos y negativos de la aplicación de la IA a los procesos de la educación básica en Venezuela.
- La propuesta de algunas recomendaciones y líneas de acción para el futuro, orientadas a promover el uso responsable y consciente de la IA en el sistema educativo venezolano.

Como limitaciones del artículo, se pueden señalar:

- La escasez de fuentes bibliográficas específicas sobre el tema de la IA en el sistema educativo venezolano, lo que dificulta la obtención de datos y evidencias empíricas que respalden el análisis realizado.
- La generalidad y superficialidad de algunas afirmaciones o argumentos, que podrían ser profundizados o matizados con mayor detalle y rigor.

- La falta de una perspectiva comparativa o contrastiva con otros contextos o experiencias educativas donde se haya aplicado la IA, lo que podría enriquecer el análisis y la discusión.

En calidad de sugerencias para futuras investigaciones sobre el tema se plantean:

- Realizar estudios de casos o experimentos que evalúen el impacto y la efectividad de las aplicaciones de la IA en el sistema educativo venezolano, desde una perspectiva cuantitativa y cualitativa.
- Explorar otras posibles aplicaciones de la IA en el sistema educativo venezolano, que respondan a las necesidades y demandas específicas de los diferentes niveles, modalidades y áreas de enseñanza.
- Comparar y contrastar las experiencias y los resultados de la aplicación de la IA en el sistema educativo venezolano con los de otros países o regiones, identificando las similitudes y las diferencias, así como las fortalezas y las debilidades.

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Efectos cuantitativos del uso de TIC en el rendimiento académico de estudiantes universitarios


Quantitative effects of the use of ICT on the academic performance of university students

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Resumen

Este estudio investiga los efectos cuantitativos del uso de Tecnologías de la Información y Comunicación (TIC) en el rendimiento académico de estudiantes universitarios. Se utilizó un diseño cuantitativo con una muestra representativa de estudiantes de diferentes carreras y facultades. Los datos se recolectaron a través de cuestionarios y registros académicos, y se analizaron variables como la frecuencia de uso de TIC y el tipo de TIC utilizadas. Los resultados mostraron una asociación positiva entre el uso frecuente de TIC, especialmente en actividades relacionadas con el aprendizaje y la colaboración académica, y el rendimiento académico de los estudiantes universitarios. Se encontraron diferencias significativas en el uso de TIC según la carrera y facultad, lo que sugiere la influencia del contexto académico. Estos hallazgos resaltan la necesidad de fomentar un uso efectivo de las TIC en la educación superior, promoviendo estrategias pedagógicas que integren adecuadamente las TIC en el proceso de enseñanza-aprendizaje. Además, contribuyen a la comprensión del papel de las TIC en el rendimiento académico de los estudiantes universitarios, ofreciendo una base cuantitativa para futuras investigaciones en este campo.

Palabras clave: Educación superior, Rendimiento académico, TIC.

Abstract

This study investigates the quantitative effects of the use of Information and Communication Technologies (ICT) on the academic performance of university students. A quantitative design was used with a representative sample of students from different majors and faculties. The data was collected through questionnaires and academic records, and variables such as the frequency of ICT use and the type of ICT used were analyzed. The results showed a positive association between the frequent use of ICT, especially in activities related to learning and academic collaboration, and the academic performance of university students. Significant differences were found in the use of ICT according to the major and faculty, which suggests the influence of the academic context. These findings highlight the need to promote the effective use of ICT in higher education, promoting pedagogical strategies that properly integrate ICT into the teaching-learning process. In addition, they contribute to the understanding of the role of ICT in the academic performance of university students, offering a quantitative basis for future research in this field.

Keywords: Academic performance, Higher Education, Technology.

1. Introducción

El avance acelerado de las Tecnologías de la Información y Comunicación (TIC) ha transformado la forma en que se lleva a cabo la educación superior en todo el mundo (González, 2020). El acceso generalizado a dispositivos electrónicos, como computadoras, tabletas y teléfonos inteligentes, así como a Internet de alta velocidad, ha permitido a los estudiantes universitarios acceder a una amplia gama de recursos en línea, colaborar con compañeros de estudio de forma virtual y participar en actividades de aprendizaje en entornos digitales (Agüero & Dávila, 2023). Estas tecnologías han brindado oportunidades sin precedentes para el acceso a la información, la comunicación, la colaboración y la creación de conocimiento, lo que ha generado un creciente interés en investigar su impacto en el rendimiento académico de los estudiantes (Pardo et al., 2020).

El objetivo de este estudio es realizar un análisis cuantitativo de los efectos del uso de TIC en el rendimiento académico de estudiantes universitarios. Se busca examinar cómo el uso frecuente de TIC en actividades relacionadas con el aprendizaje, como la búsqueda y procesamiento de información, la participación en foros de discusión en línea, la colaboración en proyectos y la presentación de trabajos, se relaciona con el rendimiento académico de los estudiantes. Se consideraron variables como la frecuencia de uso de TIC, el tipo de TIC utilizadas, la percepción de utilidad y eficacia de las TIC en el proceso educativo, y posibles diferencias en el uso de TIC según la carrera y facultad de los estudiantes.

El estudio contribuye a la comprensión del papel de las TIC en la educación superior y su impacto en el rendimiento académico de los estudiantes universitarios. Además, ofrece una base cuantitativa para futuras investigaciones en este campo, con el objetivo de fomentar un uso efectivo de las TIC en la educación superior y promover estrategias pedagógicas que integren adecuadamente estas tecnologías en el proceso de enseñanza-aprendizaje. Los resultados obtenidos en este estudio pueden ser de relevancia para educadores y profesionales interesados en el uso de TIC en la educación superior, con el fin de tomar decisiones informadas sobre su implementación en el currículo y mejorar la calidad de la enseñanza y el aprendizaje en el contexto universitario.

2. Referentes teóricos y revisión de literatura

En esta sección, se llevará a cabo una revisión de literatura que servirá como base sólida para contextualizar el estudio. Además, se presentarán teorías específicas relevantes que contribuyen a la comprensión de los efectos del uso de Tecnologías de la Información y Comunicación (TIC) en el rendimiento académico de estudiantes universitarios.

3. Revisión de Literatura

La educación superior ha experimentado una transformación significativa debido al rápido avance de las Tecnologías de la Información y Comunicación (TIC). La accesibilidad generalizada a dispositivos electrónicos y a Internet de alta velocidad ha permitido a los estudiantes universitarios acceder a una variedad de recursos en línea (Selwyn, Nemorin, Bulfin, & Johnson, 2017) y participar en actividades de aprendizaje en entornos digitales. Esta evolución ha generado un interés creciente en investigar cómo el uso de las TIC afecta al rendimiento académico de los estudiantes.

Investigaciones previas han identificado que las TIC pueden ser herramientas valiosas en el proceso de aprendizaje (Broadbent & Poon, 2015; Šumak & Šorgo, 2016). Los estudiantes pueden utilizar las TIC para buscar y procesar información en línea, participar en foros de discusión en línea, colaborar en proyectos y presentar trabajos de manera eficiente. Estas actividades digitales han demostrado tener un impacto positivo en el rendimiento académico al mejorar el acceso a la información y fomentar la colaboración.

Sin embargo, la implementación efectiva de las TIC en la educación superior también presenta desafíos, como la necesidad de desarrollar habilidades digitales y la gestión de la sobrecarga de información en línea (González-Gómez, Guardiola, Martín Rodríguez, & Montero Alonso, 2012). Además, existen diferencias individuales y contextuales que pueden influir en la relación entre el uso de TIC y el rendimiento académico, lo que destaca la necesidad de investigar estas variables en profundidad.

Teorías Relevantes

Dentro del contexto de esta investigación, se consideran dos teorías fundamentales que ayudan a explicar la relación entre el uso de las TIC y el rendimiento académico:

- Teoría del Aprendizaje Social de Bandura: Esta teoría postula que el aprendizaje es un proceso social en el que los individuos adquieren conocimientos y comportamientos al observar a otros y participar en interacciones sociales. En el contexto de las TIC, esta teoría sugiere que la colaboración en línea y la observación de modelos de aprendizaje digital pueden influir en el rendimiento académico de los estudiantes.
- Teoría de la Carga Cognitiva de Sweller: Esta teoría se centra en cómo los recursos cognitivos limitados de un individuo afectan su capacidad para aprender y procesar información. En el uso de las TIC, la teoría de la carga cognitiva sugiere que la presentación eficiente de contenido digital y la estructuración adecuada de las actividades en línea pueden reducir la carga cognitiva de los estudiantes y mejorar su rendimiento académico.

4. Metodología

El estudio utilizará un diseño de investigación no experimental de tipo correlacional. En este tipo de diseño, se busca establecer relaciones entre variables, pero no se manipulan ni controlan variables independientes (Hernández & Mendoza, 2018). Se realizó una medición de las variables de interés en un momento dado, sin intervenir en el proceso educativo de los estudiantes.

La población objetivo del estudio fueron los estudiantes universitarios de diversas carreras y facultades de una institución educativa seleccionada. Para elegir la muestra, se utilizó un muestreo no probabilístico por conveniencia (Arias, 2016), eligiendo estudiantes universitarios que estén haciendo uso de TIC en su proceso de aprendizaje. Se contó con una muestra de 230 estudiantes para asegurar la representatividad de los resultados.

Se utilizaron varios instrumentos para recopilar los datos necesarios para el estudio. Entre ellos se incluyeron:

- Cuestionario de Uso de TIC: Se diseñó un cuestionario ad hoc para medir la frecuencia de uso de TIC en actividades relacionadas con el aprendizaje, como la búsqueda y procesamiento de información, la participación en foros de discusión en línea, la colaboración en proyectos y la presentación de trabajos. El cuestionario incluyó ítems de respuesta cerrada en una escala ordinal que va desde "nunca" hasta "siempre", para que los estudiantes indiquen con qué frecuencia utilizan las TIC en sus actividades académicas.
- Registro de calificaciones: Se obtuvo información de las calificaciones registradas en el sistema académico de la institución para medir el rendimiento académico de los estudiantes. Se recopiló el promedio general de calificaciones obtenidas por los estudiantes en el último semestre académico.
- Escala de Percepción de Utilidad y Eficacia de las TIC: Se utilizó una escala de tipo Likert para medir la percepción de los estudiantes sobre la utilidad y eficacia de las TIC en el proceso educativo. El cuestionario incluyó afirmaciones relacionadas con la utilidad y eficacia de las TIC en el aprendizaje, y

los estudiantes indicarán su grado de acuerdo o desacuerdo en una escala de 5 puntos que va desde "totalmente en desacuerdo" hasta "totalmente de acuerdo".

El estudio se llevó a cabo en varias etapas. En primer lugar, se obtuvo el permiso de la institución educativa para llevar a cabo la investigación. A continuación, se realizó la selección de la muestra de estudiantes universitarios que estén haciendo uso de TIC en su proceso de aprendizaje. Se administraron los cuestionarios de Uso de TIC y de Percepción de Utilidad y Eficacia de las TIC a los estudiantes seleccionados, y se recopilaron los registros de calificaciones del último semestre académico. Los datos obtenidos se analizaron utilizando técnicas estadísticas descriptivas y de correlación.

Tabla 1.

Características demográficas de la muestra de estudiantes universitarios

Variable	N	%
Género		
Mujeres	143	62
Hombres	87	38
Edad (años)		
Promedio	21	
Desviación estándar (DE)	2.5	

En la tabla 1 se presenta la información demográfica de la muestra de estudiantes universitarios, con un tamaño de muestra (N) de 230 participantes. Se muestra el desglose por género, indicando el número (N) y porcentaje (%) de mujeres y hombres en la muestra. Además, se presenta la edad promedio de los participantes, que es de 21 años, con una desviación estándar (DE) de 2.5 años.

Tabla 2.

Uso de TIC en actividades académicas de estudiantes universitarios

Actividad académica	Porcentaje de estudiantes que utilizan TIC
Búsqueda y procesamiento de información en línea	92%
Participación en foros de discusión en línea	78%
Colaboración en proyectos en línea	65%
Presentación de trabajos en línea	57%

En la tabla 2 se presenta el porcentaje de estudiantes universitarios que utilizan TIC con frecuencia en diferentes actividades académicas. Los resultados muestran que el 92% de los estudiantes utilizan TIC para la búsqueda y procesamiento de información en línea, seguido por la participación en foros de discusión en línea con un 78%. Además, el 65% de los estudiantes colabora en proyectos en línea, y el 57% presenta trabajos en línea.

Tabla 3.

Percepción de utilidad y eficacia de las TIC

Ítem de percepción	Porcentaje de estudiantes
Las TIC me resultan útiles para el aprendizaje	72%
Las TIC son eficaces para mejorar mi rendimiento académico	68%

En la tabla 3 se presenta el porcentaje de estudiantes universitario que mostraron una percepción positiva sobre la utilidad y eficacia de las TIC en el proceso educativo. Los resultados muestran que el 72% de los estudiantes estuvo de acuerdo o totalmente de acuerdo en que las TIC les resultaban útiles para el aprendizaje, y el 68% estuvo de acuerdo o totalmente de acuerdo en que las TIC eran eficaces para mejorar su rendimiento académico.

Tabla 4.

Relación entre el uso de TIC y el rendimiento académico en estudiantes universitarios

		Uso de TIC	Rendimiento académico
Uso de TIC	Correlación de Pearson	1	,420**
	Sig. (bilateral)		0.000
	N	230	20
Rendimiento académico	Correlación de Pearson	,420**	1
	Sig. (bilateral)	0.000	
	N	230	20

** . La correlación es significativa en el nivel 0,01 (bilateral).

En la tabla 4 se presenta la correlación obtenida entre el uso de TIC en actividades académicas y el rendimiento académico de los estudiantes. Los resultados muestran una correlación positiva y significativa ($r = 0.42$, $p < 0.05$), lo que indica una relación estadísticamente significativa entre el uso de TIC y el promedio general de calificaciones obtenidas por los estudiantes en el último semestre académico.

5. Resultados y discusión

El hallazgo de una correlación positiva y significativa entre el uso de TIC en actividades académicas y el rendimiento académico de los estudiantes respalda la idea de que el acceso y la utilización efectiva de las TIC pueden tener un impacto positivo en el desempeño académico. La correlación positiva obtenida ($r = 0.42$, $p < 0.05$) indica que, a mayor uso de TIC en actividades académicas, mayor es el promedio general de calificaciones obtenidas por los estudiantes en el último semestre académico. Esto sugiere que las TIC pueden ser una herramienta valiosa para mejorar el rendimiento académico de los estudiantes universitarios (Zamora et al., 2020).

Los resultados también son consistentes con investigaciones previas que han destacado el papel de las TIC en la educación superior (Poveda & Cifuentes, 2020). El hecho de que el 85% de los estudiantes reportaron utilizar TIC con frecuencia en actividades relacionadas con el aprendizaje, y que actividades como la búsqueda y procesamiento de información en línea, la participación en foros de discusión en línea, la colaboración en proyectos en línea y la presentación de trabajos en línea sean las más comunes, sugiere que los estudiantes están adoptando activamente estas herramientas en su proceso de estudio. Esto puede atribuirse a la creciente disponibilidad de tecnología y acceso a Internet en entornos educativos, así como a la necesidad de adaptarse a un entorno académico cada vez más digitalizado (Varela et al., 2022).

La percepción positiva sobre la utilidad y eficacia de las TIC en el proceso educativo también es un hallazgo relevante. El hecho de que el 72% de los estudiantes estuvo de acuerdo o totalmente de acuerdo en que las TIC les resultaban útiles para el aprendizaje, y el 68% estuvo de acuerdo o totalmente de acuerdo en que las TIC eran eficaces para mejorar su rendimiento académico, respalda la idea de que los estudiantes perciben las TIC como herramientas valiosas en su proceso de estudio. Esto puede deberse a que las TIC proporcionan acceso a una amplia gama de recursos en línea, facilitan la comunicación y colaboración con otros estudiantes y profesores, y permiten presentar y compartir trabajos de manera más eficiente (Herrera, Espinoza, Ludeña, & Michay, 2019).

Es importante destacar que el uso de TIC en el contexto educativo también puede tener desafíos y limitaciones (Santos et al., 2021). Por ejemplo, la necesidad de desarrollar habilidades digitales puede ser un obstáculo para algunos estudiantes, especialmente aquellos que no tienen acceso previo o familiaridad con la tecnología. Además, la sobrecarga de información en línea puede dificultar la identificación de fuentes confiables y la evaluación de la calidad de la información obtenida. Es crucial que las instituciones educativas y los docentes aborden estos desafíos proporcionando capacitación y apoyo adecuados a los estudiantes en el uso efectivo y responsable de las TIC.

En conclusión, los resultados de este estudio respaldan la correlación positiva entre el uso de TIC en actividades académicas y el rendimiento académico de los estudiantes universitarios. Esto sugiere que el uso efectivo de las TIC puede ser beneficioso para mejorar el desempeño académico de los estudiantes.

6. Conclusiones

- El uso de TIC en actividades académicas está correlacionado positivamente con el rendimiento académico de los estudiantes universitarios. Esto indica que el acceso y la utilización efectiva de las TIC pueden tener un impacto positivo en el promedio general de calificaciones obtenidas por los estudiantes en el último semestre académico.
- Las TIC son herramientas valiosas en el proceso de estudio de los estudiantes universitarios. La mayoría de los estudiantes reportaron utilizar TIC con frecuencia en actividades relacionadas con el aprendizaje, como la búsqueda y procesamiento de información en línea, la participación en foros de discusión en línea, la colaboración en proyectos en línea y la presentación de trabajos en línea. Esto sugiere que los estudiantes están adoptando activamente estas herramientas en su proceso de estudio.
- Existe una percepción positiva sobre la utilidad y eficacia de las TIC en el proceso educativo. La mayoría de los estudiantes considera que las TIC son útiles para el aprendizaje y eficaces para mejorar su rendimiento académico. Esto respalda la idea de que las TIC son percibidas como herramientas valiosas en el proceso de estudio de los estudiantes.
- Sin embargo, el uso de TIC en el contexto educativo también presenta desafíos y limitaciones, como la necesidad de desarrollar habilidades digitales y la sobrecarga de información en línea. Es importante que las instituciones educativas y los docentes aborden estos desafíos proporcionando capacitación y apoyo adecuados a los estudiantes en el uso efectivo y responsable de las TIC.

Los resultados de este estudio sugieren que el uso efectivo de las TIC puede ser beneficioso para mejorar el rendimiento académico de los estudiantes universitarios. Sin embargo, es importante tener en cuenta que también existen desafíos y limitaciones en el uso de TIC en el contexto educativo, que deben abordarse para garantizar un uso adecuado y responsable de estas herramientas en la educación superior.

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Estudiantes versus docentes: la percepción de dominio de las competencias digitales en una institución de educación superior, en República Dominicana

Students versus teachers: the perception of mastery of digital skills in a higher education institution in the Dominican Republic

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Resumen

Este artículo de investigación aborda la percepción de los estudiantes y docentes sobre el dominio de las competencias digitales en una institución de educación superior, en República Dominicana. La metodología utilizada fue la aplicación de una encuesta de 10 preguntas por cada grupo, con un enfoque descriptivo y cuantitativo. Contestaron 136 estudiantes y 33 docentes. Los estudiantes y docentes perciben que dominan las competencias digitales, el 95.6% de los estudiantes consideran que los docentes deben seguir formándose. Los docentes perciben que sus estudiantes deberán aprender sobre las competencias digitales vinculadas al ámbito académico. Se concluye que los docentes necesitan profundizar en competencias digitales más complejas para guiar a sus estudiantes.

Palabras clave: Competencias digitales, docentes, educación, estudiantes.

Abstract

This research article addresses the perception of students and teachers about the mastery of digital skills in a higher education institution in the Dominican Republic. The methodology used was the application of a survey of ten questions for each group, a descriptive and quantitative approach was applied. They answered This research article addresses the perception of students and teachers about the mastery of digital skills in a higher education institution in the Dominican Republic. The methodology used was the application of a survey of ten questions for each group, with a descriptive and quantitative approach. 136 students and thirty-three teachers answered. Students and teachers perceive that they have mastered digital skills, 95.6% of students consider that teachers should continue training. Teachers perceive that their students should learn about digital skills linked to the academic field. It is concluded that teachers need to delve into more complex digital skills to guide their students.

Keywords: Digital skills, education, students, teachers.



1. Introducción

Esta investigación indaga sobre la percepción de dominio de las competencias digitales por parte de los estudiantes y docentes en una institución de educación superior en República Dominicana durante el año 2023. El rol del docente es entendido como poseedor de habilidades, destrezas, conocimientos y competencias ligadas a los componentes pedagógico, comunicacional, tecnológico y evaluativo (Vera, 2014). Sumado, a la necesidad de adaptarse a las nuevas tendencias digitales para ayudar a las nuevas generaciones alcanzar el aprendizaje (Terán Cázares et al., 2019).

Por consiguiente, cumplen un rol más demandante, se han incrementado sus competencias, debido al desarrollo de la tecnología (Mas, 2017). Se entiende que el docente es un agente mediador en el proceso de enseñanza, influido por las Tecnologías de la Información y la Comunicación (TIC), y está llamado a asumir esas nuevas competencias (Díaz, 2021).

En una investigación realizada en México donde participaron 20 instituciones universitarias con 247 docentes se determinó que las competencias digitales con mayor dominio son el compromiso y la responsabilidad social de los docentes con el uso de las TIC y de dominio medio-bajo la correspondiente al rol docente, que incluye planificación, desarrollo y gestión de las experiencias de aprendizaje y evaluación con apoyo de las TIC (Pozos & Tejada, 2018).

Durante la pandemia del COVID – 19, los docentes y los estudiantes se movieron hacia espacios virtuales a una velocidad y profundidad asombrosa (UNESCO, 2022). Los centros de educación superior ofrecieron cursos y formación a los docentes que muchas veces resultaban abrumados por el poco tiempo que se disponía para la asimilación de estas nuevas habilidades y conocimientos (Martín et al., 2020). El resultado fue el aumento de la enseñanza a través de herramientas digitales durante el año 2020. Sumado al incremento de la diversidad de herramientas digitales en versión libre, permitió su utilización y propicio la construcción de aprendizaje por parte de los docentes y estudiantes (Padilla et al., 2022). Esta investigación tiene como objetivo conocer la percepción de dominio de las competencias digitales de los estudiantes y docentes en una institución de educación superior en República Dominicana, durante el año 2023, luego de la coyuntura de la pandemia.

2. Revisión de literatura

En la revisión de literatura se encontró que las competencias digitales son definidas en varios marcos de referencias institucionales en diferentes países y organismos multilaterales, entre ellos están el Marco de Referencia de competencias digitales DigCompEdu (Punie, 2017); el Marco de Referencia de competencias digitales docentes (UNESCO, 2019) y el Marco de Referencia de competencias digitales docentes (INTEF, 2022). En la región latinoamericana, Colombia tiene un marco de referencia de competencias digitales.

Tabla 1.

Marcos de Referencias de Competencias digitales de DigCompEdu, UNESCO y INTEF

Marco de Referencia de competencias digitales DigCompEdu, (Punie, 2017) (europeo)	Marco de Referencia de competencias digitales docentes, (UNESCO, 2019)	Marco de Referencia de competencias digitales docentes (INTEF, 2022) (España)
6 áreas: Área 1: Compromiso profesional Área 2: Recursos Digitales Área 3: Enseñanza y Aprendizaje Área 4: Evaluación Uso de tecnologías y estrategias digitales para mejorar evaluación. Área 5: Capacitar a los estudiantes Área 6: Facilitar la competencia digital de los estudiantes	6 aspectos prioritarios de la labor pedagógica: 1. Comprensión del papel de las TIC en las políticas educativas 2. Currículo y evaluación 3. Pedagogía 4. Aplicación de competencias digitales 5. Organización y administración 6. Aprendizaje profesional de los docentes	6 áreas: Área 1: Compromiso profesional. • Área 2: Contenidos digitales. • Área 3: Enseñanza y aprendizaje. • Área 4: Evaluación y retroalimentación. • Área 5: Empoderamiento del alumnado. • Área 6: Desarrollo de la competencia digital del alumnado.

Fuente: Elaboración propia con base a los Marcos de Referencia de las competencias digitales

El término de competencias digitales se puede decir que es la capacidad del docente para trabajar en el contexto de un sistema de educación, que incluye enseñar, gestionar el aprendizaje digital y la labor profesional de ser docente (Starkey, 2019).

Los nativos digitales reclaman la transformación de los modelos educativos (Terán Cázares et al. 2019). Estos nuevos estudiantes afrontan de otra manera las necesidades de aprendizaje, a través de lo digital de manera más eficiente (Gisbert et al., 2016). Los estudiantes suelen considerar que sus docentes no tienen suficiente dominio de las competencias digitales y los docentes asumen que si tienen competencias digitales. Esta brecha en las percepciones puede traer consecuencia para el desarrollo del proceso enseñanza- aprendizaje del estudiante. Se sobrestima que el manejo de las herramientas y aplicaciones tecnológicas por parte de los estudiantes y docentes. En el estudio realizado por Riveros y Santos (2019) concluyó que los estudiantes utilizan con frecuencia la tecnología, aunque no tienen un alto grado de desarrollo de las competencias digitales básicas. Entonces el rol de docente es alfabetizar digitalmente al estudiante para utilizar el pensamiento crítico y ayudarlo a dar solución creativa de los problemas del presente y futuro de nuestra sociedad (Cabero et al., 2023).

En este estudio se plantea como pregunta de investigación, cuáles son las percepciones de los estudiantes y docentes sobre el dominio de las competencias digitales en una institución de educación superior en República Dominicana durante el año 2023. Por consiguiente, las percepciones de ambos grupos se convierten en las variables que guían la investigación del presente estudio de alcance descriptivo.

3. Metodología

Esta investigación fue de tipo cuantitativo y enfoque descriptivo (Sabino, 1992), que permitió comprender el fenómeno u objeto de estudio, se escogió una población objetivo y accesible que son los estudiantes y docentes de una universidad de República Dominicana.

El universo estuvo compuesto por 536 estudiantes de los dos primeros trimestres y 64 docentes de la Facultad de Ciencias Sociales y Humanidades, perteneciente al ciclo de estudios generales de la institución. Estos docentes dictan clases a los estudiantes escogidos para este estudio. Se utilizarán dos encuestas, con cuestionarios diferentes: uno dirigido a los docentes y otra dirigido a los estudiantes. Cada cuestionario

abarcará diez preguntas por encuesta, se aplicarán los instrumentos enviando un enlace por correos electrónicos y los grupos de mensajería instantánea del WhatsApp. No se hicieron preguntas para recoger datos personales. Las preguntas del cuestionario de los estudiantes son las siguientes:

¿Sus docentes utilizan la tecnología digital (herramientas, plataformas y dispositivos)? ¿Ha tenido clases donde los docentes usan presentaciones digitales y videos para complementar las clases? ¿Sus docentes organizan los materiales didácticos y archivos digitales en sus aulas virtuales de manera adecuada? ¿En las clases virtuales tus docentes manejan las plataformas de videollamada? ¿Percibe que sus docentes evalúan y dan retroalimentación a través de foros, asignaciones, cuestionarios en el aula o entornos virtuales? ¿Sus docentes incorporan las redes sociales en sus comunicaciones con los estudiantes? ¿Sus docentes producen contenidos digitales como e-book, infografías, juegos, videos, etc.? ¿Sus docentes les han hablado de seguridad e identidad digital? ¿Considera que sus docentes tienen suficiente dominio de sus capacidades digitales? ¿Piensa que los docentes deben seguir formándose para lograr mayor dominio de sus capacidades digitales?

El cuestionario dirigido a los profesores estaba conformado por las siguientes preguntas: ¿Sus estudiantes utilizan la tecnología digital (herramientas, plataformas y dispositivos)? ¿Los estudiantes son capaces de crear, editar y guardar archivos como documentos de textos, presentaciones digitales o hojas de cálculos, entre otros? ¿Sus estudiantes manejan las aulas virtuales de manera adecuada? ¿En las clases virtuales sus estudiantes utilizan con facilidad las plataformas de videollamada? ¿Percibe que sus estudiantes toman en cuenta la evaluación y la retroalimentación realizada a través de foros, asignaciones, cuestionarios en el aula o entornos virtuales? ¿Sus estudiantes manejan las redes sociales en sus comunicaciones académicas? ¿Sus estudiantes son capaces de producir y editar contenidos digitales más complejos como videos, audios, infografías, blog con fines académicos? ¿Sus estudiantes manejan temas de seguridad e identidad digital? ¿Considera que sus estudiantes tienen suficiente dominio de sus competencias digitales? Por favor, mencione dos competencias digitales que consideran que sus estudiantes deberían recibir formación.

Estos cuestionarios son de elaboración propia y fueron diseñados para responder las preguntas de investigación planteadas en esta investigación.

4. Resultados y discusión

En este estudio sobre la percepción de dominio de las competencias digitales de los estudiantes y docentes se observaron hallazgos interesantes como resultado de la aplicación de los instrumentos de investigación. En total, se recibieron las respuestas de 136 estudiantes y 33 docentes. Los estudiantes de los dos primeros trimestres perciben que casi la totalidad de sus docentes utilizan la tecnología, es decir herramientas, plataformas y dispositivos, sólo el 1.5% de los profesores no maneja de la tecnología. Casi la totalidad considera que sus docentes usan presentaciones digitales y videos para complementar las clases y solo 0.7% han tenido clases con docentes que no los utilizan.

El 89% de los estudiantes opinan que sus docentes organizan los materiales didácticos y archivos digitales de manera adecuada en el aula virtual. En cambio, decimoprimer parte de los estudiantes opinan que no organizan adecuadamente los materiales archivos digitales. Los estudiantes contestaron que el 89% de sus docentes manejan las plataformas de videollamada. Durante la pandemia en la institución hubo formación continua dirigida a los docentes para manejo de las plataformas de videollamadas, la décimo primera parte de los estudiantes consideran que sus docentes no manejan las plataformas de videollamadas.

Los estudiantes perciben que el 82.4% de sus docentes hacen evaluación y dan retroalimentación a través de foros, asignaciones y cuestionarios en el aula virtual o entornos digitales. Mientras menos de la vigésima parte perciben que sus docentes no evalúan y dan retroalimentación en el aula virtual o entornos digitales.

En cuanto a la incorporación de las redes sociales como canal de comunicación académica, los estudiantes afirman 52.2% de sus docentes las utilizan. En cambio, el restante porcentaje señalan que sus docentes no incorporan las redes sociales en las comunicaciones. El 57.4% de los estudiantes perciben que sus docentes producen contenidos digitales como e-book, infografías, juegos, videos, etc. El 42.6% responden negativamente sobre la producción de contenido por parte de sus docentes. Menos de dos tercios de los estudiantes opinan que sus docentes no les han hablado de seguridad e identidad digital. Solo el 28.9% afirma que sí les han hablado sobre seguridad e identidad digital. El 72.8% considera que sus docentes tienen suficiente dominio de sus capacidades digitales. El 27.2 de los estudiantes consideran que no tiene suficiente dominio. Cabe destacar que el 95.6% de los estudiantes piensan que los docentes deben seguir formándose para lograr mayor dominio de sus competencias digitales. Solamente el 4.4% de los estudiantes considera que no deben seguir formándose.

En el análisis de las respuestas del cuestionario, los docentes en su totalidad opinan que los estudiantes manejan de la tecnología digital (herramientas, plataformas y dispositivos). Cuando se les preguntó a los docentes si los estudiantes son capaces de crear, editar y guardar archivos como documentos de textos, presentaciones digitales o hojas de cálculos contestaron en su totalidad de manera afirmativa.

Los docentes perciben que sus estudiantes manejan las aulas virtuales de manera adecuada en 90.9%, y menos de la décima parte parece no tener un manejo adecuado. Los docentes opinan que los estudiantes en su totalidad saben utilizar las plataformas de videollamada.

Los profesores consideran que el 78.8% de los estudiantes toman en cuenta la evaluación y retroalimentación por estos entornos digitales. El restante opina lo contrario. Mas de las tres cuartas partes de los docentes piensan 75.8% que sus estudiantes manejan las redes sociales en sus comunicaciones académicas. Mientras que el restante 24.2% opinan que no manejan las redes sociales para las comunicaciones académicas.

El 93.9% de los docentes piensan que sus estudiantes son capaces de producir y editar contenidos digitales más complejos como videos, audios, infografías, blog con fines académicos. Solamente el 6.1% de los docentes consideran que sus estudiantes no son capaces de producir contenidos digitales más complejos. Cuando se les preguntó sobre el manejo de seguridad e identidad digital, el 51.5% de los docentes contestaron que sus estudiantes manejan dichos temas. Y el restante opina que no manejan temas de seguridad e identidad digital.

El 87.9% de los profesores consideran que sus estudiantes tienen suficiente dominio de sus competencias digitales. Solo el 12.1% opina lo contrario. Se les preguntó sobre dos competencias digitales que consideran que sus estudiantes deberían recibir formación y hubo seis categorías de competencias más mencionadas:

1. Manejo de gestores de referencias, bases de datos y motores de búsqueda con fines académicos.
2. Manejo de seguridad e identidad digital.
3. Producción de contenido más complejo y redacción académica.
4. Manejo de trabajos y documentos colaborativos.
5. Ética y pensamiento crítico en la virtualidad.
6. Manejo del tiempo de conexión.

Los estudiantes no poseen una visión positiva de la actitud del profesorado en referencia a su uso de la tecnología y adaptación en las metodologías (Fernández et al, 2017). En esta investigación casi tres tercios de los estudiantes encuestados perciben que sus docentes tienen dominio, sin embargo, indican en casi su totalidad (95.6%) que necesitan seguir formándose. Igualmente, los estudiantes perciben que el 42.6% de los docentes no produce contenido. Esto concuerda con el estudio realizado a docentes de República Dominicana donde señala que sus niveles de competencias digitales caen en la medida que son más complejos el contenido de las TIC (Pérez-Díaz, 2019). Las TIC son vistas más como soporte a la presencialidad y los docentes son consumidores de contenido y menos productores (Álvarez-Cadavid et al.,

2022). Esto concuerda con los resultados arrojados en este estudio. Como indica la investigadora Díaz (2021) para enseñar competencias es necesario recrear situaciones didácticas que lleven al estudiante o docente a enfrentarse a las tareas que se espera que puedan solventar. Es de suma importancia disponer de estrategias institucionales para fomentar las competencias digitales del docente (Zavala et al., 2016) y los estudiantes para una verdadera transformación digital.

5. Conclusiones

En esta investigación se propuso conocer la percepción de los estudiantes y docentes sobre el dominio de sus competencias digitales, por lo tanto, se ha encontrado que los estudiantes sí consideran que sus docentes tienen suficiente dominio de las competencias digitales. A pesar de que mientras más complejas son las competencias digitales los estudiantes perciben que sus docentes tienen un menor dominio.

Los estudiantes consideran casi en su totalidad que sus docentes necesitan seguir formándose, evidenciando una contradicción, que pudiera explicarse dado que los cuestionarios fueron enviados por correos electrónicos y grupos de WhatsApp desde teléfono y cuenta de correo institucional de un docente, posiblemente sesgo las respuestas para que fueran menos críticas.

Por otro lado, los docentes perciben que existe el dominio de las competencias digitales por parte de los estudiantes, no obstante, reconocen necesidades de desarrollar competencias como la seguridad e identidad digital, manejo de gestores de referencias, bases de datos y motores de búsqueda con fines académicos, manejo de documentos digitales y colaborativos, ética y pensamiento crítico en la virtualidad, manejo del tiempo de conexión entre otras. Ahora bien, en la competencia de identidad digital y seguridad señalada como importante por los docentes, pero un poco menos de la mitad de los estudiantes encuestados no han recibido formación en dicha competencia en la universidad. Entonces, existe una brecha entre la percepción de los estudiantes sobre la formación de competencias digitales de los docentes y las competencias digitales complejas que los docentes mencionan como importantes.

Los docentes necesitan profundizar en las competencias digitales más complejas a través de la formación continua que presta la universidad, para posteriormente guiar a sus estudiantes, que desconocen las dimensiones y niveles de dominio de las competencias digitales. Por lo tanto, la institución universitaria le corresponde asegurar que los estudiantes en esos primeros trimestres desarrollen las competencias digitales necesarias en el ámbito académico. Así como la coordinación de las asignaturas para que los docentes enseñen a sus estudiantes sobre estas competencias digitales de manera transversal. Cualquier investigación que intente en un futuro extender este estudio debería incluir una muestra más amplia, así se podría incluir la percepción de más estudiantes y docentes de los dos primeros trimestres de ciclo de estudios generales. Igualmente, recomendaría enviar la encuesta a través de una cuenta no perteneciente a un docente para evitar un posible sesgo en las respuestas de los estudiantes. También se podría realizar estudios focales con estudiantes, docentes y personal encargado del desarrollo profesoral para determinar las competencias digitales más importantes a desarrollar desde la perspectiva de la institución, estudiantes y docentes.

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Competencias digitales en administrativos de un instituto politécnico Uso de TICCAD para la seguridad informática institucional


Digital skills in administrators of a polytechnic institute Use of TICCAD for institutional computer security

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Resumen

Las conductas dirigidas a garantizar la seguridad informática forman parte del perfil de competencias profesionales indispensables en los empleados administrativos de las instituciones de educación superior (IES). La investigación planteó como objetivo identificar las competencias digitales de empleados administrativos para el uso seguro de las tecnologías de la información, comunicación, conocimiento y aprendizaje digitales (TICCAD) en un Instituto Politécnico de Santiago, República Dominicana. Se realizó un estudio cualitativo con abordaje hermenéutico-dialéctico. Participaron 13 empleados administrativos seleccionados con muestreo teórico, a quienes se les aplicó un cuestionario con preguntas abiertas. La reducción de datos identificó las categorías emergentes: a) seguridad informática y buen uso de las tecnologías, b) penetración-hackeo de información, c) dificultades para usar tecnología y d) alfabetización digital. Los participantes poseen conocimientos básicos sobre seguridad informática y se identificó vulnerabilidad en el sistema de seguridad institucional que afecta los procesos administrativos y estimula prácticas administrativas inadecuadas. Existe un nivel moderado en competencias digitales y bajo conocimiento sobre herramientas para la ejecución de tareas administrativas, en contraste, un alto uso de redes sociales en horario laboral. Se concluye la necesidad de capacitar-entrenar en competencias digitales para instaurar comportamientos informáticos seguros y, por tanto, mayor efectividad en los procesos administrativos institucionales.

Palabras clave: competencia digital, educación, seguridad informática.

Abstract

The behaviours aimed at guaranteeing computer security are part of the profile of essential professional competencies in administrative employees of higher education institutions (HEIs). In accordance with the above, the objective of this research was to identify the digital skills of administrative employees for the

safe use of digital information, communication, knowledge and learning technologies (TICCAD) in the Polytechnic Institute of Santiago, Dominican Republic. To achieve the above, a qualitative study was carried out, through a hermeneutic-dialectical approach. The participants were 13 administrative employees selected through a theoretical sampling, to whom a questionnaire with open questions was applied, elaborated from deductive categories, and validated by experts. The information analysis process was carried out by a categorization system, with which it was possible to identify the emerging categories of, a) computer security and good use of technologies, b) penetration or hacking of information, c) difficulties with the use of technology and d) digital literacy. The results postulate that the participants have basic knowledge of computer security, however, vulnerabilities are identified in the institutional security system that affect administrative processes and stimulate inadequate administrative practices. A moderate level is determined in the digital skills of the employees, with a low level of knowledge about tools for the execution of administrative tasks, in contrast to the high use of social networks during working hours. It concludes with the need to train-train in digital skills to establish safe computer behaviors and, therefore, greater effectiveness in institutional administrative processes.

Keywords: computer security, digital competence, education.

1. Introducción

Las tecnologías de la información, comunicación, conocimiento y aprendizaje digitales (TICCAD) son herramientas imprescindibles en los distintos procesos que se llevan a cabo en las instituciones educativas en sus diferentes niveles. Sin embargo, si bien estas cumplen con una importante función en los procesos de aprendizaje a través de la relación docente-estudiante, también son fundamentales para el desarrollo de las diversas actividades administrativas que se llevan a cabo en las instituciones de educación superior (IES). Según indica Tapia (2020) las tecnologías en los centros de enseñanza cumplen con la función de mejorar la productividad y eficiencia requeridas para la gestión administrativa, simplificando las tareas y ampliando la capacidad de comunicación y cooperación entre los miembros del equipo de docentes y administrativos. La gestión administrativa comprende diversos procesos relacionados con la función académica, tales como matrículas, procesamiento de calificaciones, actas de grado, solo por citar algunas, las que deben caracterizarse por su confidencialidad y la precisión en el manejo de información y datos, además de garantizar la seguridad en virtud de la probable intervención de agentes externos que vulneren los sistemas y alteren el correcto y ético funcionamiento de los procesos académico-administrativos institucionales. Para Anchelia-Gonzales et al., (2021) la gestión administrativa en las instituciones educativas comprende aquellas tareas que son ejecutadas para cumplir los objetivos de dicha institución, entre los cuales se menciona la planificación del curso escolar, delimitación de funciones, procesos financieros, administración de la planta física y, en especial, el manejo de la data académica de cada estudiante. De lo anterior se puede afirmar que los procesos administrativos en las instituciones educativas se articulan en una amplia dinámica institucional que incluye "desde la relación del centro con su medio, asignación de tareas y la organización para la enseñanza, hasta el manejo del personal y las demandas administrativas del plantel" (Anchelia-Gonzales et al., 2021, p.5).

2. Referentes teóricos o revisión de literatura

Las tareas de gestión y administrativas son ejecutadas con mayor eficiencia cuando existen competencias digitales en los empleados que llevan a cabo los procesos mediados por las tecnologías; en tal sentido, Martínez-Alvarez (2020) postula que una adecuada gestión administrativa se relaciona positivamente con la integración de las TICCAD y las habilidades del personal en el manejo de estas. Desde la perspectiva de Ticona (2022), si bien el desempeño laboral de los empleados administrativos universitarios mejora gracias a la incorporación de las tecnologías, también se evidencia que la convivencia digital y la tecnología son moderadamente importantes para los empleados, lo cual indica que no existe aún una completa

valoración de la relevancia de las habilidades digitales en su quehacer diario. Las competencias digitales constituyen capacidades en el empleo de los medios informáticos para la recuperación, procesamiento y evaluación de la información para cumplir con los objetivos requeridos, las cuales se adquieren en un proceso de formación y capacitación dirigido a promover un adecuado grado de análisis, razonamiento, alfabetización y comunicación fluida en las diferentes áreas de aplicación de las tecnologías (Reche et al., 2019); dichas competencias implican indudablemente el conocimiento e implementación de las medidas de seguridad informática que permitan controlar las distintas vulnerabilidades que pueden afectar los datos de la institución.

Es importante enfatizar que, si bien los distintos actores en las IES requieren adoptar un modelo informático seguro y competente, en el área administrativa estas medidas son imprescindibles en virtud de que se vinculan, no solo con el control académico, sino con aspectos financieros y organizacionales. La seguridad informática consiste en los procesos de protección que se realizan en un sistema informático, lo que implica una diversidad de acciones, entre las que se destacan el respaldo de datos, disponibilidad de la información, confidencialidad del usuario e integridad, brindando garantía de que los datos no sean manipulados por terceros (Gaitán, 2020).

Para el caso de los procesos administrativos, los datos informáticos pueden ser objeto de distintas amenazas, cuyo fin es la apropiación de información o su manipulación, lo cual afecta el óptimo desenvolvimiento de la gestión institucional. Para lograr la vulneración de la información existen distintas modalidades entre las más frecuentes se encuentran el robo de identidad y la obtención de contraseñas e interceptación de mensajes, entre otras, conocido como penetración o *hackeo* de información (Chiliquinga, 2020). A lo anterior habrá que acotar que, según destaca Narváez (2019) la mayoría de las amenazas a la seguridad informática en las organizaciones se deben a omisiones y descuidos atribuibles al factor humano, como compartir equipos y contraseñas, dispositivos de almacenamiento o no cerrar sesiones de forma segura.

Al respecto, Baca (2016) destaca la importancia de que los datos se manejen de forma efectiva, con disponibilidad y apego a los estándares de seguridad, como el control de acceso, autenticación o verificación de identidad de usuarios y/o sitios de *internet*, antes de realizar cualquier transacción y envío de información. Las IES no solo deben contar con que todos sus actores sean competentes digitalmente y apliquen las medidas de seguridad informática, sino poseer mecanismos tecnológicos que garanticen un entorno seguro.

De acuerdo con Gaitán (2020) las actividades tecnológicas en las instituciones educativas suelen realizarse a través de dispositivos en red que vinculan distintos sistemas electrónicos como computadoras, *routers*, *red lan*, *wan*, *man*, repetidores, servidores, lo que permite a través de *internet* tener acceso a las redes instaladas en los diferentes departamentos de la organización. Es recomendable que se implementen programas y *softwares* institucionales que garanticen la protección y seguridad a los usuarios en línea, aun y cuando esto también se asocie a una mayor inversión por parte de la institución (Chiliquinga, 2020).

Es precisamente el factor económico el que permite que las diversas IES no posean los *softwares* y equipos necesarios para garantizar la seguridad digital, dejando estas medidas de seguridad en manos de los usuarios, razón por la cual puede afirmarse que tanto estudiantes, docentes como empleados administrativos deben ser competentes digitalmente para asegurar las vulnerabilidades a las cuales están expuestos los datos. Marín et al., (2021) señalan que es fundamental que las competencias digitales a desarrollar en los actores educativos incluyan componente clave, tales como información y alfabetización informacional, comunicación y colaboración, creación de contenidos digitales, seguridad y resolución de problemas. Por otra parte, Zambrano y Valencia (2017) señalan que el empleo seguro de las TICCAD implica competencias que garanticen proteger los recursos de los riesgos o ataques informáticos, además del cuidado de los datos confidenciales de la institución, lo cual conlleva a un comportamiento académico

y ético cuyas dimensiones cognitiva, procedimental y actitudinal contemplan las medidas de seguridad informática para el manejo apropiado y socialmente aceptable de las TICCAD.

El empleo seguro de las TICCAD debe ser suficientemente afianzado en los procesos de formación del personal docente y administrativo de las instituciones educativas, tomando en cuenta que en estos equipos se integran diferentes perfiles profesionales juntamente con el modelo pedagógico específico, razón por la cual es fundamental la supervisión escolar para su adecuado desarrollo (Bonilla y Ferra, 2021). De tal manera que uno de los aspectos que se destacan en las instituciones educativas es la necesidad de integrar los valores de la responsabilidad personal y la responsabilidad institucional relacionados con la seguridad informática (Pérez, 2018); para ello se requiere establecer tanto medidas como modelos de mediación que permitan identificar como cada actor educativo percibe o incorpora los valores inherentes a la seguridad de los datos personales y compartidos. Las mediaciones tecnológicas deben estar contenidas en las normas y valores institucionales, pero adicionalmente, la conducta de cada individuo debería ser monitoreada a través de una planeación educativa institucional que permita un buen desempeño en materia de ciber-seguridad. Lo anterior armonizando que, en materia de seguridad institucional, las competencias digitales individuales y los objetivos institucionales deberían estar articulados. Cabe destacar lo postulado por Baca (2016), acerca de la efectividad de la prevención del riesgo informático en la institución dependerá del costo de inversión, de los aparatos electrónicos y del personal calificado para manejar adecuadamente el sistema tecnológico en la institución. Lo anteriormente expuesto destaca la interrelación relevante entre los distintos actores educativos y las instituciones, sin descuidar las políticas educativas que permitan alcanzar las necesarias competencias digitales para desarrollar entornos informáticos seguros. Las TICCAD en una institución de educación superior no solo se aplican en los procesos de enseñanza-aprendizaje, sino que conforman un sistema operativo que permite que la institución funcione con eficiencia, por tal motivo, las políticas educativas integran a todo el personal en el proceso de adopción de las competencias digitales. En la República Dominicana el programa de transformación digital en las instituciones educativas comienza con la implementación del proyecto República digital en el 2017, proporcionándole a todo el personal docente, directivos y estudiantes computadoras o tabletas; de igual forma la integración de profesionales expertos en tecnología asignados a los centros educativos desempeñándose como tutores y facilitadores para capacitar al personal impulsando la apropiación de las TICCAD. El programa de transformación digital fue impulsado por el Ministerio de Educación (MINERD), Programa de las Naciones Unidas para el Desarrollo (PNUD), Acción Empresarial por la Educación (EDUCA) y Asociación Dominicana de Rectores Universidades (ADRU). Dentro de las capacitaciones a nivel nacional se destacan la formación en competencias tecnológicas para la práctica docente y las metodologías necesarias para la educación a distancia. Este programa se implementa además por causa de la pandemia COVID-19 obligando a toda la nación a trabajar el año escolar 2020-2021 totalmente virtual (García et al., 2019). En este contexto, el interés de la investigación se enfocó en identificar las competencias digitales de un grupo de empleados administrativos en un Instituto Politécnico en la República Dominicana y, como las citadas competencias, garantizaban la seguridad informática de la institución. En tal sentido, se planteó como objetivo principal del estudio valorar las competencias digitales de empleados administrativos para el uso seguro de las TICCAD en el Instituto Politécnico.

3. Metodología

El desarrollo de la investigación se abordó bajo paradigma sociocrítico, considerando las diferencias epistemológicas entre las ciencias sociales y naturales que permiten suponer que la realidad social es construida y no está determinada por relaciones causales, como es el caso de las ciencias naturales (Ibáñez, 2009). En el tenor anterior, se relaciona también con los enfoques que sustentan el objeto de estudio, es decir, las perspectivas constructivista y conectivista que contemplan que los aprendizajes están mediados por las interacciones sociales y tecnológicas (Hernández-Sampieri et al, 2016). El estudio se fundamenta también en el método hermenéutico-dialéctico, el cual se caracteriza por la posibilidad de establecer interpretaciones de la información y de este modo lograr la comprensión de los significados

(Martínez-Miguel, 1996). Desde la perspectiva teórico-conceptual descrita, la investigación se propuso una interpretación de las competencias digitales para el uso seguro de la TICCAD con fines educativos en los empleados administrativos de la institución en estudio.

Contexto de estudio

La investigación se realizó en un Instituto Politécnico ubicado en Santiago, República Dominicana, institución pública que tiene como objetivo la formación de técnicos profesionales capacitados para integrarse al proceso productivo de la nación en las áreas de *informática, turismo, contabilidad, mercadeo y enfermería*. Los estudiantes de las áreas técnicas oscilan en las edades de 14 años para 4º grado, 15 años para 5º grado y 16 años para 6º grado.

La institución educativa atiende generalmente a estudiantes que pertenecen a familias de bajos recursos socioeconómicos; los jóvenes al ser contratados en sus respectivos centros de pasantías pueden cubrir sus propios gastos para iniciar su carrera universitaria o ser microempresarios, lo cual les permite apoyar a sus familias. Cabe destacar que el instituto está ubicado en un área rural en el cual prevalece una población juvenil, menor de 30 años.

Participantes

Actualmente la institución educativa cuenta con 40 docentes en distintas áreas. La población estudiantil la constituyen 620 estudiantes de los diferentes niveles educativos y 13 empleados administrativos. De acuerdo con los objetivos del estudio, la selección de los *informantes clave* se enfocó en el personal administrativo. El personal administrativo proviene de diferentes comunidades, su experiencia institucional se identifica en el rango de 6 meses a 23 años de servicio. Sus conocimientos académicos son diversificados con títulos de Licenciatura, Maestría y Bachilleres y sus salarios se establecen con base en sus niveles de titulación. Para la investigación se consideró como *informantes clave* a toda la nómina de empleados administrativos, es decir, a 13 empleados, quienes fueron seleccionados bajo un criterio de muestreo teórico, análogo al muestreo no probabilístico de carácter intencional, lo cual indica que no se establecieron procedimientos de muestreo (Hernández-Sampieri et al., 2016). Cabe destacar que todos los participantes contaron con un consentimiento informado.

Categorías deductivas

Para los fines de la investigación y de acuerdo con los objetivos de esta, se estableció un sistema de categorías deductivas para la reducción de datos, siguiendo lo propuesto por Cisterna-Cabrera (2005) lo que permitió definir los temas a abordar a partir de la información teórica recopilada en forma preliminar. Las categorías se describen en la siguiente tabla.

Tabla 1
Categorías deductivas.

OBJETIVO	CATEGORÍAS	SUBCATEGORÍAS
Identificar las competencias digitales de empleados administrativos para el uso seguro de las tecnologías de la información, comunicación, conocimiento y aprendizaje digitales (TICCAD) en un Instituto Politécnico.	COMPETENCIA DIGITAL Dominio cognitivo, procedimental y actitudinal de las TICCAD que garantizan su empleo seguro, crítico y creativo de los procesos educativos (Edel, 2020)	Dimensión cognitiva Apropiación de las TICCAD relacionada con las destrezas, saberes, conocimientos y habilidades de pensamiento (Edel & Ruiz, 2022) Dimensión procedimental Apropiación de las TICCAD acerca de su empleo, uso, usabilidad, utilización, aplicación e implementación (Edel & Ruiz, 2022)
	USO SEGURO DE LAS TECNOLOGÍAS DE LA INFORMACIÓN, COMUNICACIÓN, CONOCIMIENTO Y APRENDIZAJE (TICCAD) Comportamiento académico y ético cuyos componentes cognitivo, procedimental y actitudinal contemplan las medidas de seguridad informática para el manejo apropiado y socialmente aceptable (Silva, & Miranda, 2020)	Dimensión actitudinal Apropiación de las TICCAD en virtud de los actos, conductas, disposición, comportamiento y aceptación (Edel & Ruiz, 2022) Comportamiento académico ante las TICCAD Conductas y destrezas escolares para el apoyo-colaboración y dirección-influencia que fortalecen los conocimientos (Balderas et al, 2021) Comportamiento ético ante las TICCAD Conductas y destrezas para proteger la privacidad en línea y la libertad de expresión (Balderas et al., 2021) Medidas de seguridad informática Percepción del docente o estudiante en cuanto al nivel de las medidas de seguridad informática que emplea para realizar sus trabajos habituales (Balderas et al, 2021) Manejo apropiado y socialmente aceptable de las TICCAD Percepción en cuanto al nivel de manejo y destrezas de las TICCAD (Balderas et al, 2021)

Instrumentos de recolección de datos

Se emplearon cuestionarios con preguntas abiertas elaborados a partir de las categorías deductivas, conformados por 10 preguntas abiertas, las cuales se validaron por juicio de expertos y fueron sometidas a una prueba piloto a fin de verificar la comprensión de su contenido.

Análisis de información

El proceso para en análisis de la información se realizó mecánicamente por medio de un procedimiento de análisis de categorías emergentes derivadas de los cuestionarios (Monje, 2011). Para lo anterior se realizaron las codificaciones abierta, axial y selectiva que permitieron la definición de las categorías emergentes que se exponen en el siguiente apartado. De manera posterior se llevó a cabo la triangulación

entre instrumentos, referentes teórico-conceptuales y evidencia empírica de los investigadores, perfilándose los resultados del presente estudio.

4. Resultados y discusión

En la próxima tabla se describen las categorías emergentes y las subcategorías identificadas, en la recolección de información y datos, a través de la aplicación de los cuestionarios a los 13 empleados administrativos de la institución.

Tabla 2.
Categorías emergentes personal administrativo

CATEGORÍAS	SUBCATEGORÍAS
SEGURIDAD INFORMÁTICA Y BUEN USO DE LAS TECNOLOGÍAS	<ul style="list-style-type: none"> ▪ Verificación de fuente. ▪ Trabajo manual para evitar penetración de información institucional. ▪ Violación de privacidad. ▪ Distracción.
PENETRACIÓN O HACKEO DE INFORMACIÓN	<ul style="list-style-type: none"> ▪ Intercepción de correo electrónico. ▪ Pérdida de usuario y contraseña. ▪ Riesgo de pérdida de información. ▪ Contraseñas con vulnerabilidad. ▪ Manipulación de dispositivos electrónicos. ▪ Brecha digital.
DIFICULTADES PARA EL USO DE TECNOLOGÍA	<ul style="list-style-type: none"> ▪ Docentes con tecnofobia. ▪ Dificultad para el manejo de Moodle. ▪ Conexión inestable <i>internet</i>, electricidad, telefonía. ▪ Navega en <i>internet</i>.
ALFABETIZACIÓN DIGITAL	<ul style="list-style-type: none"> ▪ Realiza descargas de aplicaciones y documentos. ▪ Manejo de documentos en línea. ▪ Manipula su cuenta en línea con contraseña segura.

Seguridad informática y buen uso de las tecnologías

Todos los miembros del personal administrativo entrevistados afirman que el uso de la tecnología en la institución está asociado con el conocimiento de medidas de seguridad que garantizan la privacidad y confidencialidad de los datos personales e institucionales.

Considerando que los *informantes clave* son profesionales encargados de los procedimientos administrativos en la institución educativa, lo que implica actividades académicas, financieras y de infraestructura, entre otras, uno aspecto que destaca en los resultados es que diversas actividades no se realizan *online*, para evitar la posible penetración de los datos institucionales, particularmente porque la institución está afiliada a *internet* a través de un servidor manejado por una empresa privada con alta vulnerabilidad de datos e información. Debido a que los empleados conocen que existen vulnerabilidades, la mayoría de los participantes señala que prefieren garantizar el acceso seguro a través de sitios confiables cuando es necesario consultar información, los que identifican con un *candado* o páginas oficiales de fácil discriminación. Sin embargo, indican que el riesgo de emplear *internet* no es únicamente la posibilidad de que se vulnere la seguridad si no se conocen las medidas pertinentes, sino que esta herramienta es usada de forma excesiva por algunos compañeros durante su tiempo laboral para conectarse a las redes sociales, fomentando la distracción del trabajo. En este sentido, en algunas respuestas se logró identificar que el excesivo tiempo dedicado a las redes sociales no solo redundaba en poca eficiencia laboral, sino que es también un problema de seguridad informática que puede afectar el buen uso de la tecnología en el

tratamiento de la información de la institución, ya que, al emplearse las computadoras institucionales para estos fines, las contraseñas pueden quedar expuestas.

Penetración o hackeo de información

La mayoría de los empleados administrativos conoce los riesgos de penetración de la información cuando no se toman medidas seguras; sin embargo, en las respuestas a los cuestionarios realizados se pudo conocer que dos entrevistados desconocen cómo puede llevarse a cabo el *hacking* de información personal o institucional, lo cual se considera una conducta de riesgo informático que denota un nivel bajo de competencia digital. Tal y como se indicó en la categoría anterior, la mayoría de los participantes concuerda en que existen vulnerabilidades en el uso de los dispositivos tecnológicos de la institución que pueden permitir la penetración de la información que se maneja internamente, razón por la cual se evita el uso de la red para determinados procesos. Debe tomarse en cuenta que para cualquier institución educativa la seguridad de la información académica es prioritaria, y al no existir un *software* seguro, optan por llevar a cabo las actividades de forma tradicional, tal y como ocurre en el área de coordinación. Sin embargo, para algunos participantes esta medida no evita la penetración de la información, ya que es necesario en primer lugar un conocimiento claro de que se está potencialmente expuesto a través de la conexión del celular o la computadora, y en segundo lugar, que la inexistencia de un sistema institucional de seguridad informática permite que estas vulnerabilidades se mantengan.

En este sentido, un aspecto señalado por los entrevistados es la penetración de los correos electrónicos que permite ingresar a información personal. Estas situaciones se generan especialmente por olvidos involuntarios de usuario y contraseña, o cuando estos datos quedan expuestos en las computadoras que se manejan en las áreas administrativas. Asimismo, indican que existen contraseñas con vulnerabilidad, que pueden ser fácilmente ingresadas por terceras personas. Por tanto, en esta categoría la mayoría de los participantes indican que el sistema informático institucional es susceptible a *hacking* o penetración de la información, ya sea por descuidos personales o por falta de *software* de seguridad.

Dificultades para el uso de tecnologías

En este grupo se identificó una categoría asociada a las dificultades para usar tecnologías. De forma objetiva, los empleados administrativos señalan que al no estar directamente vinculados con el proceso académico han podido observar distintas problemáticas en cuanto al uso de las TICCAD. Como elemento resaltante, seis de los trece empleados, destacan que el nivel de conocimiento y apropiación de las tecnologías no es suficiente para la labor administrativa que realizan, por lo cual es necesario recibir mayor capacitación en esta área. Esto también se asocia al uso de sistemas manuales en lugar de los procesos automatizados, lo que conlleva a que los procedimientos sean más lentos. Cabe destacar que en la categoría *seguridad informática* se destacaba que estos procedimientos se realizan para evitar penetraciones de agentes externos, pero en los resultados se evidenció que las bajas competencias digitales en algunos de los participantes es también un factor que se asocia a esta problemática, por lo cual puede afirmarse que el recurso manual no es solo una medida de seguridad sino un comportamiento producido por bajos niveles de competencias digitales en algunos empleados. Desde el punto de vista institucional, los participantes también destacan que la conexión inestable a *internet* y a la energía eléctrica, así como la poca señal en la telefonía celular, inciden negativamente tanto en los procesos académicos como en la ejecución de los procesos administrativos, así que de manera general la adaptación tecnológica no es completamente efectiva en la institución. Esta situación estructural, aunado a las escasas competencias digitales en un grupo de los empleados administrativos se relacionan con vulnerabilidades a la seguridad y poca eficiencia en los procedimientos.

Alfabetización digital

Uno de los principales valores de la alfabetización digital es garantizar la seguridad informática, a través de descargas seguras de aplicaciones y documentos, así como el uso de páginas confiables y los procedimientos que garantizan que estas aplicaciones son útiles y seguras, conductas que varios de los participantes realizan. Otro de los valores importantes que indican la alfabetización digital son las acciones para la navegación en *internet*, no solo en cuanto a seguridad de los datos sino en cuanto a la verificación de las fuentes, aspecto también reportado por los entrevistados. Sin embargo, la alfabetización digital también evidencia las competencias digitales para el manejo de documentos administrativos y la información institucional. En este sentido, los empleados reportan un manejo muy limitado de herramientas de uso administrativo, y en su lugar generalizan distintos tipos de aplicaciones como útiles para su labor, destacando como las más usadas las siguientes: *internet*, redes sociales, pantallas digitales, *WhatsApp* y herramientas de *office* (sin precisar cuáles).

En líneas generales, en esta categoría se destaca nuevamente la necesidad de la capacitación y formación digital para lograr mejores destrezas en el trabajo eficiente, especialmente en cuanto a la importancia de los protocolos para el manejo de documentos en línea, como los formularios, en los cuales puede quedar expuesta información importante. Por ello mencionan la necesidad de tener competencias digitales que les permita la utilización de documentos en red aseguradas por el propietario y los usuarios con permiso de edición.

5. Discusión

Al analizar las categorías emergentes en los participantes del estudio, se logró apreciar que la seguridad informática constituye una prioridad, ya que consideran la necesidad de evitar que la información administrativa sea penetrada por terceros. Los empleados administrativos de la institución en estudio utilizan formas de prevención básicas, como el uso de contraseñas seguras, evitar las redes *wifi*-abiertas y uso de antivirus. Evidentemente, la seguridad informática es uno de los elementos prioritarios en el desarrollo de competencias digitales en toda institución educativa y son habilidades mínimas que permiten lograr una adecuada y efectiva interacción en el ámbito de aprendizaje y laboral (Revelo et al., 2018). La verificación de las fuentes es otra de las estrategias fundamentales para prevenir las vulnerabilidades en la red por acceso a páginas inseguras. Sin embargo, de acuerdo con lo identificado, existen distintas vulnerabilidades en la institución, debido a que se comparten equipos y se accede a una red abierta, lo cual permite que las contraseñas queden expuestas y sea posible el hackeo de la información o el robo de datos confidenciales. El factor humano es uno de los principales problemas para la obtención de datos, robo de identidad, interceptación de mensajes y pérdida de información, según ha identificado Narváez (2019), lo cual evidencia la necesidad de que la institución realice una inversión en *software* y equipo que permita asegurar el acceso a los equipos tecnológicos y de esta manera garantizar la efectividad de los procesos, recomendación realizada por Chilingua (2020) para garantizar el uso seguro en las organizaciones.

En este mismo aspecto, cabe destacar que los empleados administrativos están conscientes de la posibilidad de penetración de los datos, y destacan que tanto las características del *internet* de la institución como los equipos compartidos son inadecuados para garantizar la seguridad ya que existen muchas vulnerabilidades detectadas. Por este motivo han preferido llevar a cabo actividades manualmente y reducir los procesos automatizados para evitar penetraciones en la información interna. Esto evidencia los riesgos en seguridad informática existentes en la institución y permite considerar que aun y cuando los actores institucionales tienen claras las medidas de prevención en seguridad informática, existen fallas institucionales para proporcionar un entorno digital más seguro. En su investigación, Pons (2018), manifiesta que la responsabilidad en la ciberseguridad procura la protección individual y colectiva ante cualquier ataque informático en sus diferentes modalidades. Sobre la base de esta idea, esta

responsabilidad implica una diversidad de acciones que no solo se limitan al entorno institucional sino también al ámbito personal y familiar, tomando en cuenta que las tecnologías están llamadas a satisfacer necesidades personales, educativas o laborales que se articulan tecnológicamente. Por tanto, todos los actores de la institución educativa están implicados en el cumplimiento de las normativas de seguridad que son requeridas y sancionadas legalmente en el país, tal y como destaca el Artículo 5 de la Ley No. 53-07 sobre Crímenes y Delitos de Alta Tecnología:

El hecho de divulgar, generar, copiar, grabar, capturar, utilizar, alterar, traficar, descifrar, decodificar o de cualquier modo descifrar los códigos de acceso, información o mecanismos similares, a través de los cuales se logra acceso ilícito a un sistema electrónico, informático, telemático o de telecomunicaciones, o a sus componentes, o falsificar cualquier tipo de dispositivo de acceso al mismo, se sancionará con la pena de uno a tres años de prisión y multa de veinte a cien veces el salario mínimo.

El hecho de que la seguridad informática está sancionada legalmente indica que las competencias digitales no solo se refieren al buen uso de la tecnología, sino a la conducta responsable en las redes y en el acceso a los datos. Por tanto, no solo se trata de sustituir el uso de la tecnología por el recurso manual como una forma de garantizar la seguridad, sino de enfatizar que todo proceso que implique la penetración y mal uso de la información institucional es considerado un delito. A pesar de que los empleados administrativos poseen conocimientos sobre seguridad informática, sus competencias digitales se ubican en niveles moderados a bajos, condición consistente con lo postulado por Ticona (2022), quien ha encontrado que si bien el desempeño laboral de los empleados administrativos en instituciones de educación ha mejorado gracias a la incorporación de las tecnologías, también se evidencia que sus habilidades en el manejo digital no son suficientemente evidentes en los empleados para un óptimo funcionamiento laboral. Según informan los empleados administrativos, existen las competencias instrumentales para el manejo de documentos, sin embargo, las limitaciones en cuanto a la seguridad informática que posee la institución están incidiendo negativamente en un uso más extendido de las tecnologías para la optimización de los procesos administrativos que se llevan a cabo manualmente.

Por otro parte, no existen conocimientos, ni destrezas en el manejo de aplicaciones pertinentes para tareas administrativas, de manera genérica se refiere internet, redes sociales, aplicaciones de mensajería y herramientas de *office*, como las alternativas de uso administrativo. Al respecto, puntualizar lo señalado por George (2020) acerca de que la alfabetización digital en personal administrativo se refiere a las competencias básicas para elaborar y procesar de forma eficiente documentos a través de los medios digitales. En este sentido, los empleados administrativos requieren un mayor nivel de competencias que permitan el acceso seguro a documentos, especialmente de *office* y a la utilización de documentos en red, como las herramientas de *google-docs* y *Google-drive* para garantizar la efectividad de su labor. Cabe mencionar que en los resultados también se destaca que el uso de las redes sociales con fines recreativos es una problemática que afecta el desarrollo de las actividades administrativas, ya que hay un uso extendido de estas a través de los celulares y computadoras, lo cual es corroborado al momento de informar que las redes sociales y mensajería *whatsapp* son las herramientas más utilizadas por los empleados. Un resultado similar fue identificado en la investigación realizada por Rosario y Ruiz (2018) al mostrar en un grupo de empleados administrativos de instituciones públicas y privadas en Puerto Rico el uso excesivo de las redes sociales tanto en hogar como en el trabajo, lo cual interfiere en las actividades laborales.

6. Conclusiones

Los empleados administrativos de la institución educativa requieren mayores competencias digitales que permitan la eficiencia en los complejos procesos administrativos que realizan, lo anterior confirma lo postulado por Martínez-Álvarez (2020) al referir que una adecuada gestión administrativa se relaciona positivamente con la integración de las TICCAD en los distintos procesos. Si bien los empleados refieren cumplir con conductas de seguridad informática, dicho comportamiento organizacional no se articula con

procesos digitalmente pertinentes, por lo que no es factible alcanzar la seguridad informática requerida en los lineamientos institucionales.

De acuerdo con lo anterior, la institución requiere de erradicar el empleo indebido de la tecnología, lo cual se asocia principalmente con el uso excesivo de redes sociales, la sustitución de procesos automatizados por procesos manuales y el conocimiento básico de procedimientos en la penetración de datos, los cuales restan efectividad a los procesos administrativos. Hay que destacar en lo anterior, que también las acciones de la institución educativa deberán incidir en los procesos de capacitación del personal administrativo, la incorporación de tecnología y *software* necesarios para lograr la articulación entre la seguridad informática, las competencias digitales de los empleados, y la expectativa para su adecuado funcionamiento.

A manera de epílogo, se postularía abordar la integridad informática institucional a través a) del diseño de un plan de capacitación profesional para personal administrativo con el propósito de fortalecer sus competencias digitales, b) generar un plan de seguridad informática institucional que contemple la implementación de *software* para manejo y protección de datos, c) concientizar acerca del uso moderado de las redes sociales en el entorno laboral y finalmente d) diseñar un programa integral que estimule buenas prácticas para el empleo de las tecnologías de empleados, docentes y estudiantes.

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Competencias gerenciales en toma de decisiones financieras de las pequeñas y medianas empresas en Honduras


Managerial skills in financial decision making of small and medium enterprises in Honduras

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Resumen

La investigación tuvo como objetivo determinar la influencia de las competencias gerenciales en la toma de decisiones financieras de las pequeñas y medianas empresas en Honduras, buscando encontrar evidencias que relacionen las competencias y decisiones financieras cuyos resultados orienten a las empresas a buscar oportunidades para mejorar su crecimiento económico. Se utilizó un enfoque cuantitativo, con un nivel de investigación descriptivo – correlacional; se manejó una encuesta con cuestionario estructurado con 19 elementos, en escala de Likert, a través de la técnica de muestreo y aplicado a un total de 72 gerentes de PYMES, geográficamente distribuidos en San Pedro Sula, Cortés. Fue evaluado con una alta fiabilidad Alfa de Cronbach de 0.924. La adecuada toma de decisiones financieras contribuye a la supervivencia de estas empresas ante un entorno empresarial dinámico y desafiante adaptándose al mercado y lograr resultados exitosos. En la gestión de dichas empresas las decisiones financieras garantizarán un funcionamiento óptimo y sostenible a través competencias gerenciales como: Planificación financiera, comunicación efectiva, innovación, análisis y resolución de problemas en sus procesos administrativos. Es necesario implementar soluciones directivas enfocadas al impulso económico. Esta investigación evidenció la importancia de la administración por competencias gerenciales dirigidas a decisiones financieras acordes a objetivos financieros.

Palabras clave: Comunicación, organizaciones planificación financiera, rendimiento.

Abstract

The objective of the research was to determine the influence of managerial competencies in the financial decision-making of small and medium-sized companies in Honduras, seeking to find evidence that relates competencies and financial decisions, whose results guide companies to seek opportunities to improve their growth economics. A quantitative approach was used, with a descriptive-correlational level of research; A



survey was conducted with a structured questionnaire with nineteen items, on a Likert scale, through the sampling technique and applied to 72 SME managers, geographically distributed in San Pedro Sula, Cortés. It was evaluated with a high-reliability Cronbach's Alpha of 0.924. Proper financial decision-making contributes to the survival of these companies in a dynamic and challenging business environment, adapting to the market and achieving successful results. In managing these companies, financial decisions will guarantee optimal and sustainable operation through managerial skills such as financial planning, effective communication, innovation, analysis, and resolution of problems in their administrative processes. It is necessary to implement management solutions focused on economic growth. This research evidenced the importance of administration through managerial competencies aimed at financial decisions in accordance with financial objectives.

Keywords: Communication, financial planning, organizations, performance.

1. Introducción

Las competencias gerenciales en la toma de decisiones financieras es un tema que alude al análisis y la reflexión. En esta investigación se busca determinar la influencia entre ambos temas partiendo de la experiencia en las pequeñas y medianas empresas en Honduras, cabe destacar que las competencias gerenciales son habilidades y conocimientos específicos que los directivos deben poseer para enfrentar los desafíos del entorno empresarial, especialmente en el ámbito financiero, estas competencias no se limitan únicamente al conocimiento técnico, sino que también implican habilidades interpersonales y capacidades de toma de decisiones estratégicas (Solorzano, 2008).

En este sentido es importante analizar los elementos que giran en torno a la toma de decisiones tomando en cuenta la combinación de habilidad técnicas liderazgo y motivación como elementos que se encaminan a la toma de decisiones que promuevan la rentabilidad de las organizaciones a través de un ambiente colaborativo sobre los objetivos y metas financieras.

La acción gerencial se asocia con las competencias en procura elevar la operatividad financiera de las empresas, mediante la influencia interpersonal ejercida por el gerente sobre los colaboradores. Según (Robbins & Judge, 2009), el rol del gerente en la toma de decisiones financieras implica liderazgo y motivación, ya que debe guiar y dirigir a su equipo hacia los objetivos financieros de la empresa, fomentando un ambiente de trabajo colaborativo y orientado al logro. Las habilidades gerenciales para la gestión de las pequeñas y medianas empresas es un factor que contribuye para el crecimiento y posicionamiento en el sector empresarial, donde se busca identificar las competencias aplicadas por los gerentes que ayudan en sus decisiones financieras, en cuanto a conocimiento, aptitudes y habilidades para lograr alcanzar el objetivo financiero. Las habilidades gerenciales para la gestión de las pequeñas y medianas empresas como factor de permanencia, según (Crespo & Muñoz, 2022), son indispensables para el éxito de las PYMES, especialmente en el ámbito financiero. Los gerentes deben poseer conocimientos sólidos en finanzas, capacidad analítica y habilidades para la toma de decisiones financieras acertadas. Estas habilidades gerenciales no solo influyen en la toma de decisiones financieras, sino que también impactan en la eficiencia operativa y la adaptabilidad al entorno empresarial cambiante. Las habilidades gerenciales son un factor interno de las empresas de este sector que contribuyen considerablemente en su competitividad empresarial para (Paniagua & Villa, 2020), estas competencias gerenciales influyen en el crecimiento financiero a través del alcance de sus objetivos de rentabilidad financiera. Dichas empresas desempeñan un papel fundamental en las economías actuales, independientemente de su nivel de desarrollo, ya que es relevante su peso sobre el número total de empresas, su contribución al PIB o al empleo. Honduras cuenta con un fuerte tejido empresarial basado en el sector pyme, una fuerza laboral que permite impulsar decenas de actividades económicas como la agroindustria, alimentos, servicios, manufactura y comercio, entre otras (INE Honduras, 2017). En Latinoamérica, La Organización Internacional del Trabajo ha recopilado y difundido información con el propósito de determinar los

desajustes de habilidades entre los trabajadores comparable entre diferentes países. De acuerdo con este método en un número de diez países. En la región, un promedio del 52,5% de los trabajadores tiene un nivel de educación adecuado para la carga que ocupan; casi el 31,3% tiene un nivel educativo más bajo (infra cualificado) y el 15,7% tener un nivel de educación superior al requerido para el trabajo (sobre cualificado). Según esta metodología, algunos países de la región (Honduras, El Salvador, Paraguay y Uruguay), más de la mitad de los trabajadores tienen un desajuste de habilidades. (CEPAL, 2021).

Es evidente que los cambios que enfrentan las empresas clasificadas como Pymes, las conducen a replantear acciones para adaptarse y competir tanto en el mercado global como interno. Lo que conlleva a enfrentar nuevos retos con la finalidad de mantenerse vigentes en el mercado, para lo cual se requiere la aplicación de estrategias y herramientas que les permitan cumplir con los objetivos planteados, así mismo, es fundamental el apoyo del talento humano para desarrollar las habilidades y ayudar a la mejora de la gestión de los procesos. De acuerdo con (Suárez & otros, 2020) La gestión empresarial se sostiene de las capacidades de sus empleados, a partir de la cooperación de la dirección, la cual facilita la relación entre la gestión organizacional y la contribución de estos en las responsabilidades asignadas, las cuales permiten al alcance de un trabajo significativo desde el compromiso gerencial.

Ante la necesidad de encontrar puntos de mejora que contribuyan significativamente en las competencias gerenciales que ejercen la personas a cargo en la toma de decisiones financieras en Honduras, se plantea la hipótesis que sugiere un buen equipo de investigación en el rubro de estas empresas puedan obtener resultados precisos que orienten el camino estratégico de estas. En este sentido se espera que la aplicación de la toma de decisiones financieras, planeación de inversiones, planeación de financiamientos, rendimiento y políticas de crédito logren evaluarse para destacar la importancia y continuar con el crecimiento de estas.

2. Referentes teóricos o revisión de literatura

En el contexto hondureño, las pequeñas y medianas empresas enfrentan desafíos particulares en materia financiera debido a factores como; la falta de acceso a financiamiento, la volatilidad económica y la competencia del mercado. De acuerdo con ello los gerentes de estas empresas deben contar con competencias sólidas para tomar decisiones financieras acertadas (Fundación Instituto Iberoamericano de Mercados de Valores, 2017), las competencias gerenciales en el ámbito financiero son indispensables para el crecimiento y la sostenibilidad de las pymes en Honduras. Los gerentes deben tener la capacidad de analizar la información financiera, evaluar riesgos, identificar oportunidades de inversión y tomar decisiones basadas en una visión estratégica a largo plazo. De acuerdo con el estudio Diagnóstico Sectorial de la MIPYME No Agrícola en Honduras (2013) se identificó que los dueños o socios principales de las PYMES las personas cuentan con un promedio 10 años de estudio formal (la secundaria) lo que indica que manejen las operaciones matemáticas necesarias para la administración de sus negocios (Naciones Unidas CEPAL, 2022) Este conocimiento indica que pueden ser potenciales beneficiarios de servicios de desarrollo empresarial, educación financiera, entre otros. De acuerdo con (FIDA, 2020), vale la pena investigar cómo las PYMES pueden verse afectadas por las características de privación laboral en su lugar de trabajo. Manifiesta (Serna & Aragon A., 2009) esta naturaleza permite concluir que el profesional de la pequeña y mediana empresa, además de poseer conocimientos, habilidades y destrezas, debe poseer competencias muy específicas y adecuadas como ventaja competitiva y desarrollo organizacional. El profesional en todo caso debe proveerse de mecanismos de acción en la actividad laboral que a su vez le permita generar el desempeño idóneo esperado producto de su trabajo, (Alles, 2017).

Las empresas dependen del desempeño de sus empleados para asegurar la competitividad, la productividad y la rentabilidad (OIT, 2022). Argumentan (Días et al., 2020) que las bajas tasas de crecimiento económico de un país generalmente están asociadas a economías improductivas y poco competitivas, con niveles de ingresos limitados y empresas de baja rentabilidad, entre otras cosas. Por eso es tan importante aumentar la productividad de un país, para encontrar las mejores formas de utilizar la mano de obra, el capital físico

y el capital humano existentes de manera más eficiente. (OCDE, 2021) Esta situación es general entre los componentes productivos de las pymes y en gran escala, tanto en el sector agropecuario como en la manufactura y los servicios. La incompetencia de las Pymes ante altos niveles de inversión para generar un PIB per cápita mayor en el país, guarda estrecha relación con la baja productividad de la economía expone el Centro de Información Sobre Desastres y Salud (CIDBIMENA, 2018). Lo que al mismo tiempo tiene que ver con el uso de tecnologías inapropiadas y con las bajas destrezas del trabajador hondureño. A lo largo del año (1978-2013), el sistema productivo hondureño demuestra ser intensivo en mano de obra ya que la elasticidad producto empleo es mayor que la elasticidad producto capital y contribuye menos al crecimiento económico (COHEP Honduras, 2015). La productividad de los factores aporta muy poco al crecimiento económico (Banco Mundial, 2021). Hay un dominio la demanda de mano de obra de personal calificado, con niveles de más conocimientos y habilidades que causaron el traslado de trabajadores no calificados a obras de baja productividad, subempleo, desempleo y exclusión social (Castro, 2005). En este sentido la productividad es una característica que se piensa observar en las pymes y como incide en su crecimiento (Delfín & Acosta, 2016). La adquisición y el desarrollo de estas competencias se convierten en una ventaja competitiva que impulsa el crecimiento y la sostenibilidad de las pymes en el entorno empresarial actual.

3. Metodología

El estudio se basó en una metodología cuantitativa para examinar a profundidad las competencias laborales en la toma de decisiones financieras, con el objetivo de obtener teoría científica, tal y como indican (Hernández Sampieri & Torres, 2018). Primero se adoptó una investigación exploratoria-correlacional, que permitió describir y analizar las características de una población en particular y determinar si existía una correlación entre las variables de interés, de acuerdo con (Tamayo, 2007). Asimismo, se utilizó la categoría descriptiva – correlacional ya que proporcionan información para llevar a cabo estudios explicativos, tal como lo señala (Creswell, 2014) El proceso de investigación se llevó a cabo de manera secuencial y organizada, partiendo de una idea delimitada y generando objetivos y preguntas de investigación, para luego revisar la literatura y construir un marco teórico riguroso. El diseño de este estudio se clasifica como no experimental, debido a que este realiza estudios sin la manipulación deliberada de variables y en los que solo se observan los fenómenos en su ambiente natural para analizarlos. El estudio es de tipo transeccional o transversal, dado que la recolección de datos se realizó en un periodo específico de 8 meses desde septiembre de 2022 hasta abril de 2023. La población objeto de estudio fueron: y propietarios, gerentes, supervisores y jefes de área, lo que resultó en un total de 72 participantes con un nivel de confianza de 95% por la homogeneidad de la población estudiada. Se construyó el instrumento de investigación utilizando la Escala de Likert, la cual fue validada por tres expertos en el tema, concluyendo que el instrumento tiene un lenguaje comprensible y gramaticalmente aceptable. El análisis de la confiabilidad del instrumento se realizó mediante el cálculo del coeficiente Alfa de Cronbach, que mide la consistencia interna del instrumento. Para ello, se utilizó una muestra de participantes que completaron el instrumento en un solo momento, y se obtuvo nivel de confiabilidad de 0.924, lo que indica un nivel aceptable. Se utilizó la fórmula estadística para poblaciones finitas, es decir que se conoce el total de unidades de observación que la integran. La metodología propuesta permitirá obtener una comprensión detallada sobre las competencias gerenciales en la toma de decisiones financieras de las PYMES en San Pedro Sula, Honduras. Para el análisis de información se manejan técnicas estadísticas con el Software SPSS el objetivo de obtener teoría científica que explique la relación entre las variables de interés. Estos resultados pueden utilizarse para la tomar decisiones que construyan a mejorar los procesos de las empresas expuestas en el estudio.

4. Resultados y discusión

En primer lugar, se examinó el Alfa de Cronbach para identificar el nivel de confiabilidad del instrumento. La información indica que de 30 instrumentos aplicados como prueba piloto todos fueron recopilados con éxito. Para verificar estos resultados, ver tabla 1.

Tabla 1.
Estadística de fiabilidad

Estadísticas de fiabilidad	
Alfa de Cronbach	N de elementos
,924	30

Fuente: Elaboración propia mediante el programa SPSS, versión 25

Como resultado de la tabla anterior, la solidez de los resultados obtenidos en este estudio se evidencia desde la fase de recopilación de datos hasta la presentación de estos de manera clara y detallada. En particular, es importante destacar que se logró completar el 100% de los instrumentos aplicados, lo que indica una alta eficiencia en la recopilación de información. Además, se realizó un análisis de confiabilidad de los datos mediante el cálculo del alfa de Cronbach, que arrojó un valor de 0.924, lo que sugiere una buena consistencia interna de los datos. En la tabla 2, muestra la recolección de información en relación con la cantidad de participantes por cargo ocupacional. Se presenta un desglose detallado de la población analizada en el estudio, el cual incluyó a diversos miembros de las empresas. La mayoría de los participantes eran propietarios, representando el 72.2% de la población total. Los gerentes administrativos también fueron un grupo importante en la muestra, constituyendo el 11.1% de la población. Además, los gerentes y contadores generales representaron el 8.3%. Esta información es relevante para entender la diversidad de la muestra finita para comprender cómo se realizaron los análisis estadísticos posteriores.

Tabla 2.
Población Objetivo de Estudio

CARGO					
		Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válido	Gerente general	6	8,3	8,3	8,3
	Gerente administrativo	8	11,1	11,1	19,4
	Contador general	6	8,3	8,3	27,8
	Propietario	52	72,2	72,2	100,0
	Total	72	100,0	100,0	

Fuente: Elaboración propia mediante el programa SPSS, versión 25

Seguidamente se realizó un análisis sobre las propuestas que aportan beneficio a la empresa.

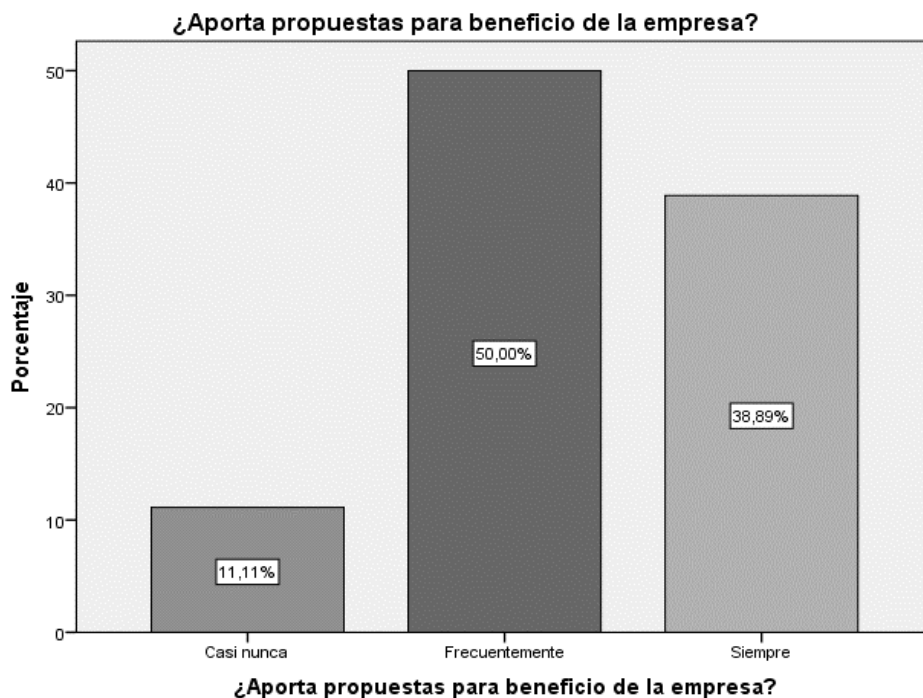


Figura 1. Aporta propuestas para beneficio de la empresa

Fuente: Elaboración propia mediante el programa SPSS, versión 25

Se presenta la opinión de quienes dirigen las empresas al momento de aportar propuestas para el beneficio de la empresa. Se observa que en un (50%) frecuentemente son beneficiosas para la empresa, seguido de un (38,89) expresa que siempre, y finalmente, un (11,11%) casi nunca. Estos resultados denotan incertidumbre en la acción gerencial para la toma de decisiones financieras, no obstante es una oportunidad para evaluar el desempeño de los cargos que dirigen para identificar en qué momento del proceso puede encontrarse una oportunidad de mejora. La toma de decisiones gerenciales implica enfrentar un grado de incertidumbre debido a la complejidad y la falta de información completa y precisa. Los directivos deben lidiar con múltiples factores y variables que afectan las decisiones financieras, como los cambios en el entorno empresarial, los riesgos financieros y las limitaciones de recursos. Esta incertidumbre puede generar diferentes opiniones y perspectivas entre los directivos al evaluar las propuestas para el beneficio de la empresa, Mintzberg (1973). La identificación de oportunidades de mejora en el proceso de toma de decisiones permite a los directivos analizar los factores que contribuyen a la incertidumbre y adoptar medidas correctivas, como mejorar la comunicación, fortalecer la capacidad analítica o implementar herramientas de apoyo a la toma de decisiones.

En la figura 2 se analizan las ideas consideradas por los directivos para el logro de objetivos en la empresa.

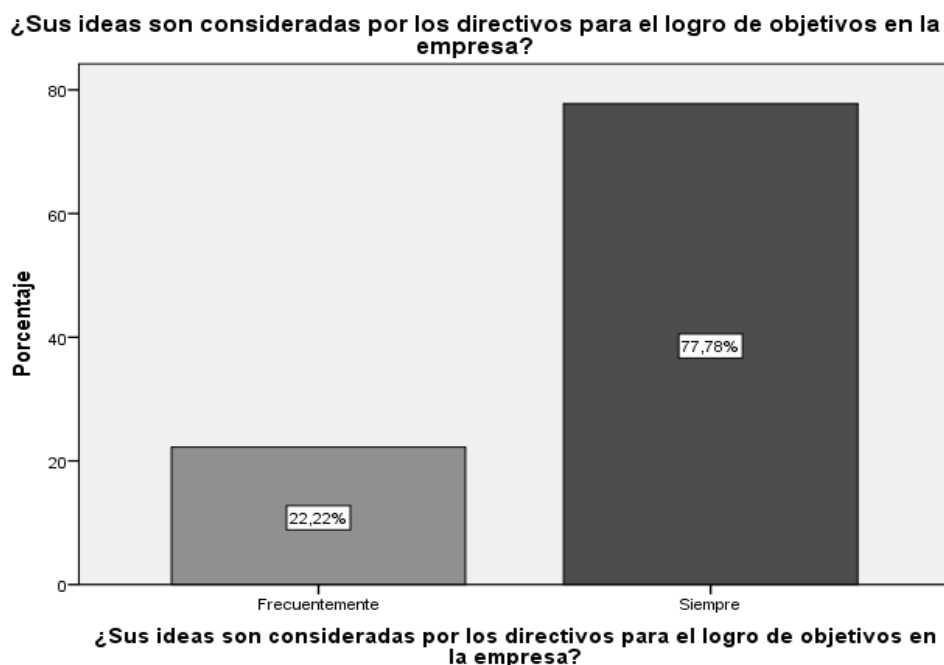


Figura 2. Ideas consideradas por los directivos para los objetivos

Fuente: Elaboración propia mediante el programa SPSS, versión 25

Se muestran los resultados referentes a las ideas de los directivos que son consideradas para el logro de objetivos. Se observa que en un (77,78%) siempre son tomadas en cuenta, seguido de un (22,22) frecuentemente. Estos resultados indican que los directivos se presentan propuestas que son llevadas a ejecución dentro de la empresa en orientación a los objetivos y metas de la empresa para el crecimiento rentable. En la toma de decisiones se destaca la importancia de involucrar a los directivos en los procesos para mejorar el compromiso y la eficacia organizacional. La participación de los directivos en la toma de decisiones puede aumentar la motivación, la responsabilidad y el sentido de pertenencia, lo que conduce a una mayor implementación de las decisiones y al logro de los objetivos organizacionales. Además, indica que un alto porcentaje de las ideas de los directivos son tomadas en cuenta siempre, respaldan esta teoría y sugieren que existe una cultura organizacional favorable a la participación y la implementación de propuestas de los directivos. En el estudio se realizó un análisis de las competencias gerenciales y su correlación con cada uno de los ítems seleccionados para identificar su correlación ejecutados en cada indicador el cual se personifica en la tabla 3

Tabla 3.
Competencias Gerenciales y sus Dimensiones

		Competencias gerenciales y sus dimensiones				
		Competencias gerenciales	Planificación	Comunicación	Innovación	Análisis de problemas
Competencias gerenciales	Correlación de Pearson	1	,954**	,967**	,979**	,843**
	Sig. (bilateral)		,000	,000	,000	,000
	N	72	72	72	72	72

****.** La correlación es significativa en el nivel 0,01 (bilateral).

Fuente: Elaboración propia mediante el programa SPSS, versión 25.

Se observa que la relación de las competencias gerenciales con la innovación es fuerte. Esto indica que, si las propuestas van encaminadas a la innovación, las decisiones financieras tomadas en las empresas conducen a mayores oportunidades de crecimiento logrando la rentabilidad. Del mismo modo en cuanto a la comunicación, su relación es considerable. Esto indica que una comunicación efectiva influye en el desarrollo de acciones estratégicas en pro del crecimiento empresarial. Así mismo la planificación es fuerte evidencia que llevar a ejecución este proceso a corto, mediano y largo plazo conlleva a decisiones financieras que apoyen el crecimiento de la empresa. Finalmente, el análisis de los problemas tiene una relación fuerte, incurren en las competencias gerenciales, pero puede identificarse oportunidades de mejora que impulsen las decisiones financieras de la empresa. En ese sentido es importante, el análisis de problemas que permite a los gerentes identificar y comprender los desafíos financieros a los que se enfrenta la empresa, así como desarrollar soluciones efectivas para abordarlos. Seguidamente se muestra la relación entre la toma de decisiones con cada uno de los ítems seleccionados para identificar los elementos en inferen en las decisiones financieras la cual se personifica en la tabla 4.

Tabla 4.

Toma de decisiones y sus dimensiones

		Toma de decisiones y sus dimensiones				
		Toma de decisiones financieras	Planeación de inversiones	Planeación de financiamiento a corto y largo plazo	Rendimiento	Políticas de crédito para los clientes
Tomade decisiones financieras	Correlación de Pearson	1	,988**	,780**	,893**	,834**
	Sig. (bilateral)		,000	,000	,000	,000
	N	72	72	72	72	72

****.** La correlación es significativa en el nivel 0,01 (bilateral).

Fuente: Elaboración propia mediante el programa SPSS, versión 25.

Estos resultados muestran que la toma de decisiones financieras está estrechamente relacionada con estas dimensiones y que las decisiones tomadas en una dimensión pueden tener un impacto significativo en las demás dimensiones. Los gerentes deben considerar cuidadosamente las implicaciones financieras de sus decisiones en cada una de estas áreas para garantizar el éxito y la rentabilidad de la empresa a largo plazo. En cuanto a la planeación de financiamiento a corto y largo plazo, indica que las decisiones financieras están relacionadas con la planificación de la obtención de fondos para cubrir las necesidades financieras tanto a corto como a largo plazo. Con el rendimiento se muestra una relación fuerte. Esto significa que las decisiones financieras tomadas tienen un impacto directo en el rendimiento financiero de la empresa, lo cual es fundamental para lograr la rentabilidad y el crecimiento. Las decisiones financieras están relacionadas con la implementación de políticas de crédito adecuadas, lo cual puede influir en la capacidad de la empresa para gestionar su flujo de efectivo y mantener relaciones sólidas con los clientes. Estos hallazgos respaldan la relevancia de las competencias gerenciales en la toma de decisiones financieras en las pequeñas y medianas empresas en Honduras.

A continuación, se muestra la relación entre el indicador comunicación y las consultas realizadas por ítems la cual se personifica en la tabla 5.

Tabla 5.
Indicador Comunicación

Comunicación		Comunicación	¿Aporta propuestas para beneficio de la empresa?	¿Sus ideas son consideradas por los directivos para el logro de objetivos en la empresa?	¿Influye en su equipo para que se utilicen sus habilidades a fin de alcanzar los objetivos de la organización?
Comunicación	Correlación de Pearson	1	,614**	,589**	,388**
	Sig. (bilateral)		,000	,000	,001
	N	72	72	72	72

****.** La correlación es significativa en el nivel 0,01 (bilateral).

Fuente: Elaboración propia mediante el programa SPSS, versión 25.

La correlación entre la comunicación y tres elementos relacionados con el beneficio de la empresa: aportar propuestas, consideración de ideas por parte de los directivos y la influencia en el equipo para utilizar sus habilidades en el logro de los objetivos organizacionales.

La comunicación y el aporte de propuestas para el beneficio de la empresa se muestra una correlación positiva significativa. Esto indica que existe una relación entre la comunicación efectiva y la capacidad de los individuos para presentar ideas y propuestas que contribuyan al beneficio de la empresa. Una comunicación clara y abierta facilita la generación de ideas y el intercambio de información relevante para la toma de decisiones. Se una correlación positiva significativa entre la comunicación y la consideración de ideas por parte de los directivos para el logro de objetivos en la empresa. Esto indica que una comunicación efectiva influye en la receptividad de los directivos hacia las ideas planteadas por los miembros del equipo. Por último, una correlación positiva significativa entre la comunicación y la influencia en el equipo para utilizar sus habilidades con el fin de alcanzar los objetivos de la organización. Esto muestra que la comunicación efectiva puede tener un impacto en la motivación y compromiso del equipo, favoreciendo la utilización de sus habilidades y conocimientos en la consecución de los objetivos organizacionales. En el estudio se realizó el análisis del indicador innovación destacando ítems que brinden respuesta sobre su influencia, a continuación, se representa en la tabla 6

Tabla 6.
Innovación

INNOVACIÓN		Innovación	¿Su desempeño se considera alto en la organización?	¿Las decisiones que toma que respaldan la eficiencia de su área en la organización?	¿La alta dirección apoya sus actividades aportadas al éxito de la organización?	¿Se adapta al cambio, a fin de lograr los objetivos establecidos?
Innovación	Correlación de Pearson	1	,612**	,870**	,692**	,380**
	Sig. (bilateral)		,000	,000	,000	,001
	N	72	72	72	72	72

****.** La correlación es significativa en el nivel 0,01 (bilateral).

Fuente: Elaboración propia mediante el programa SPSS, versión 25.

La tabla presenta la correlación entre la innovación y cuatro aspectos relacionados con el desempeño y apoyo en la organización: consideración del desempeño alto, respaldo de decisiones, apoyo de la alta dirección y adaptabilidad al cambio. Existe una relación entre la capacidad de innovación de los individuos y el reconocimiento de su desempeño sobresaliente en la organización.

La innovación está relacionada con la capacidad de tomar decisiones que optimicen la eficiencia y productividad del área en la que se desarrolla. Las decisiones orientadas a la innovación pueden generar mejoras en los procesos y contribuir al logro de los objetivos organizacionales. La innovación es valorada y respaldada por la alta dirección, lo cual es fundamental para fomentar un ambiente propicio para la generación de ideas innovadoras y su implementación en beneficio de la organización. La capacidad de adaptarse al cambio es un elemento importante en el contexto de la innovación. Seguidamente se muestra la relación entre competencias gerenciales y toma de decisiones financieras con cada uno de los ítems seleccionados para identificar los elementos en inferen en las decisiones financieras la cual se personifica en la tabla 7.

Tabla 7.
Competencias gerenciales y toma de decisiones financieras

			Competencias gerenciales	Toma de decisiones financieras
Competencias gerenciales	Correlación de Pearson	de	1	,819**
	Sig. (bilateral)			,000
	N		72	72
Toma de decisiones financieras	Correlación de Pearson	de	,819**	1
	Sig. (bilateral)		,000	
	N		72	72

****.** La correlación es significativa en el nivel 0,01 (bilateral).

Fuente: Elaboración propia mediante el programa SPSS, versión 25.

Se las competencias gerenciales y la toma de decisiones financieras. Se observa una correlación positiva y significativa entre ambas variables. Esto indica que existe una fuerte relación entre las competencias gerenciales y la toma de decisiones financieras. Las competencias gerenciales bien desarrolladas pueden influir de manera positiva en la calidad y efectividad de las decisiones financieras en una empresa. A su vez, una adecuada toma de decisiones financieras puede ser indicativa de la presencia de competencias gerenciales sólidas. Estos resultados resaltan la importancia de contar con gerentes que posean las habilidades necesarias para tomar decisiones financieras estratégicas y eficientes.

Influencia correlacional entre competencias gerenciales y toma de decisiones financieras.

Se plantea la relación entre las competencias gerenciales y la toma de decisiones financieras en las pequeñas y medianas empresas en Honduras. Se argumenta que las competencias gerenciales son habilidades y conocimientos específicos que los directivos deben poseer para enfrentar los desafíos empresariales, especialmente en el ámbito financiero. Estas competencias no se limitan solo al conocimiento técnico, sino que también implican habilidades interpersonales y capacidades de toma de decisiones estratégicas. Por lo tanto, se busca determinar la influencia correlacional entre ambas temáticas. Este planteamiento proporciona un marco teórico para comprender cómo las competencias gerenciales pueden influir en la toma de decisiones financieras y, a su vez, impactar en el crecimiento y la rentabilidad de las empresas.

Importancia de las habilidades gerenciales en la toma de decisiones financieras

Se resalta la importancia de las habilidades gerenciales en la toma de decisiones financieras en las pequeñas y medianas empresas. Se argumenta que las habilidades gerenciales, que van más allá del conocimiento técnico, son un factor clave para el crecimiento y posicionamiento de las empresas en el sector empresarial. Los gerentes deben poseer conocimientos sólidos en finanzas, capacidad analítica y habilidades para la toma de decisiones financieras acertadas. Estas habilidades gerenciales no solo influyen en la toma de decisiones financieras, sino que también impactan en la eficiencia operativa y la adaptabilidad al entorno empresarial cambiante.

Desafíos y factores que afectan las decisiones financieras en las pymes

Se abordan los desafíos y factores que afectan las decisiones financieras en las pequeñas y medianas empresas en Honduras. Estos factores como la falta de acceso a financiamiento, la volatilidad económica y la competencia del mercado, enfrentan a los gerentes cuentan con competencias sólidas para tomar decisiones financieras acertadas. Es importante destacar la importancia de analizar la información financiera, evaluar riesgos, identificar oportunidades de inversión y tener una visión estratégica a largo plazo. Se muestra un panorama que apoye a comprender los desafíos específicos que enfrentan las pymes en el ámbito financiero y cómo las competencias gerenciales pueden ayudar a superarlos.

Productividad y competencias gerenciales en las PYMES

Se explora la relación entre la productividad y las competencias gerenciales en las pequeñas y medianas empresas este indica que es un factor interno que contribuye significativamente a la competitividad empresarial de las PYMES. Se resalta que las bajas tasas de crecimiento económico y la improductividad están asociadas con empresas de baja rentabilidad y niveles de ingresos limitados afecta recurrentemente el desempeño y crecimiento de estas.

5. Conclusiones

Las competencias gerenciales indican un alto impacto en la toma de decisiones financieras para las pequeñas y medianas empresas. Estas competencias incluyen habilidades técnicas, habilidades interpersonales y capacidades de toma de decisiones estratégicas. La toma de decisiones financieras en las PYMES requiere analizar elementos como habilidades técnicas, liderazgo, motivación y trabajo colaborativo para promover la rentabilidad de la organización. Las habilidades gerenciales en la gestión de las pymes son importantes para su crecimiento y posicionamiento en el mercado. Estas habilidades no solo influyen en las decisiones financieras, sino también en la eficiencia operativa y la adaptabilidad al entorno empresarial cambiante. La participación de los directivos en la toma de decisiones y la implementación de sus propuestas puede mejorar el compromiso, la eficacia organizacional y el logro de los objetivos empresariales. Es importante fomentar una cultura organizacional favorable a la participación y la implementación de ideas de los directivos.

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Efectos de laboratorios virtuales en competencias procedimentales de ciencias naturales de estudiantes de octavo grado

Effects of virtual laboratories on Procedural competences in natural sciences among eighth-grade students

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Resumen

La presente investigación tuvo como propósito el fortalecimiento de las competencias procedimentales en las ciencias naturales en estudiantes de grado octavo de la Institución Educativa María Antonia Penagos de Palmira, Valle del Cauca. Para esto, se empleó una metodología cualitativa y descriptiva. La muestra fue no probabilística de 33 estudiantes. Durante el trabajo de investigación, se hizo un reconocimiento inicial mediante la aplicación de técnicas como la encuesta y la entrevista que permitieron hacer un diagnóstico preliminar y posteriormente diseñar la propuesta pedagógica estructurada en una secuencia didáctica que dentro de sus actividades contemplaba el uso de laboratorios virtuales en dos plataformas diferentes: CloudLabs (CloudLabs virtual stem: Entorno Virtual De Aprendizaje, 2023) y PhET interactive simulation (Simulaciones interactivas PhET, s. f.). Una vez aplicada la propuesta pedagógica, se evaluó su impacto mediante un cuestionario final y una entrevista a un grupo focal de estudiantes. Se evidenció que los estudiantes mostraron agrado y motivación durante la implementación de la propuesta pedagógica, esto se reflejó en la mejora de las competencias procedimentales, por consiguiente, se concluye que a través del uso de laboratorios virtuales como herramienta didáctica se pueden fortalecer las competencias procedimentales en ciencias naturales.

Palabras clave: aplicación informática, ciencias naturales, competencia, encuesta, entrevista.

Abstract

This research aimed to strengthen procedural competencies in Natural Science in eighth-grade students of



the María Antonia Penagos Educational Institution in the city of Palmira. It used a methodology under the qualitative approach and a descriptive scope, whose sample was non-probabilistic corresponding to 33 students from grades 8-2. In the research work, an initial recognition was made through the application of techniques such as a student survey and interviews with natural science teachers, which allowed a preliminary diagnosis to be made, to later design the pedagogical proposal structured in a didactic sequence that within its activities It contemplated the use of virtual laboratories in two different platforms, Cloud Labs and Phet interactive simulation. Once the pedagogical proposal was applied, its impact was evaluated through a final questionnaire and an interview with a focus group of students, and it was evidenced that the students showed pleasure and motivation during the implementation of the pedagogical proposal, which was reflected in the improvement of procedural competencies. Therefore, it is concluded that by using virtual laboratories as a didactic tool, procedure competencies in natural sciences can be strengthened.

Keywords: cloud labs, Phet interactive simulation, procedures competence, virtual laboratory.

1. Introducción

Las ciencias naturales, al ser una disciplina que busca estudiar la naturaleza, está ligada al componente práctico o experimental propio del componente científico (Estenoz, 2020). Para ello, en las aulas de clase se deberían potencializar las competencias propias de estas, entre las cuales se encuentran las competencias procedimentales, las cuales hacen referencia a todo el componente práctico y/o experimental o metodología, que permiten dar respuesta a diversos interrogantes o preguntas sobre el mundo natural (Instituto Colombiano para la Evaluación de la Educación [Icfes], 2019).

Una de las estrategias didácticas que más se emplea para desarrollar las competencias procedimentales es el laboratorio. No obstante, muchas instituciones educativas carecen de infraestructura, equipo o materiales para su realización. Tal es el caso de la Institución Educativa María Antonia Penagos de la ciudad de Palmira, Valle del Cauca, por lo cual, se hace necesario pensar en otras herramientas o estrategias mediadas por TIC como los laboratorios virtuales, los cuales son sitios informáticos conocidos como entornos virtuales de aprendizaje (EVA), que simulan una situación de aprendizaje como el laboratorio tradicional, pero con la ventaja que no tienen restricción del tiempo o espacio, entre otras ventajas (López & Morcillo, 2007).

En este escenario surge la investigación que tiene como objetivo fortalecer las competencias procedimentales en ciencias naturales a través del uso de laboratorios virtuales como herramienta didáctica en estudiantes de grado octavo de la IE María Antonia Penagos de la ciudad de Palmira, Valle del Cauca, para lo cual se plantearon cuatro objetivos específicos que buscan reconocer el nivel de las competencias procedimentales en las ciencias naturales, en los estudiantes de grado octavo y docentes de ciencias naturales de la IE, diseñar una propuesta pedagógica, que incluya el uso de laboratorios virtuales en el desarrollo de un eje temático en la asignatura de ambiental, aplicar dicha propuesta pedagógica y evaluar su impacto en el desarrollo de las competencias procedimentales en las ciencias naturales.

2. Metodología

Tipo de estudio

El trabajo de investigación se realizó desde un enfoque cualitativo, con un alcance descriptivo. En cuanto al diseño del proceso de investigación, este fue Investigación acción de tipo práctico

Participantes

Para el desarrollo de la investigación, se contempla la población de la Institución Educativa María Antonia Penagos ubicada en Palmira, Valle, la cual está conformada por 2871 estudiantes, 89 docentes, cinco

directivos docentes (rector y cuatro coordinadores), los cuales desarrollan sus actividades en las cinco sedes. La muestra fue no probabilística, es decir que fue intencional, porque está conformada por estudiantes que la investigadora tiene a su cargo, es decir 33 estudiantes del grado 8-2.

Materiales e instrumentos

Para el desarrollo del trabajo investigativo se hizo uso de un video beam, 20 computadores portátiles y un equipo de sonido.

Para la recolección de los datos se utilizaron varios instrumentos: un cuestionario aplicado a estudiantes en la fase inicial y final, una entrevista a los docentes de ciencias naturales y una entrevista a un grupo focal de estudiantes.

Cuestionario

El cuestionario aplicado inicialmente a los estudiantes comprendía dos partes. La parte A constaba de 12 preguntas mixtas en escala Likert y preguntas abiertas, con el fin de indagar sobre los recursos tecnológicos y plataformas virtuales conocidas y utilizadas por los estudiantes, así como su experiencia con el componente práctico en las ciencias naturales. La parte B del cuestionario constó de 10 preguntas cerradas tipo Icfes con el fin de evaluar su desempeño en la competencia procedimental.

Posterior a la aplicación de la propuesta pedagógica, se aplicó de nuevo la parte B del cuestionario con el fin de establecer una comparación frente a los resultados iniciales.

Encuesta

En el proyecto de investigación se aplicaron dos encuestas, una a cinco docentes del área de ciencias naturales y otra a un grupo focal de 10 estudiantes del grado 8-2.

La encuesta aplicada al grupo de docentes fue una entrevista semiestructurada con once preguntas abiertas cuyo objetivo era conocer el uso que los docentes hacían de los recursos tecnológicos respecto a los laboratorios virtuales y como guiaban al estudiante hacia el desarrollo de las competencias procedimentales.

Procedimiento

El plan de trabajo de la investigación estuvo dividido en cuatro fases en las cuales se desarrollaron varias actividades como se muestra en la figura 1.

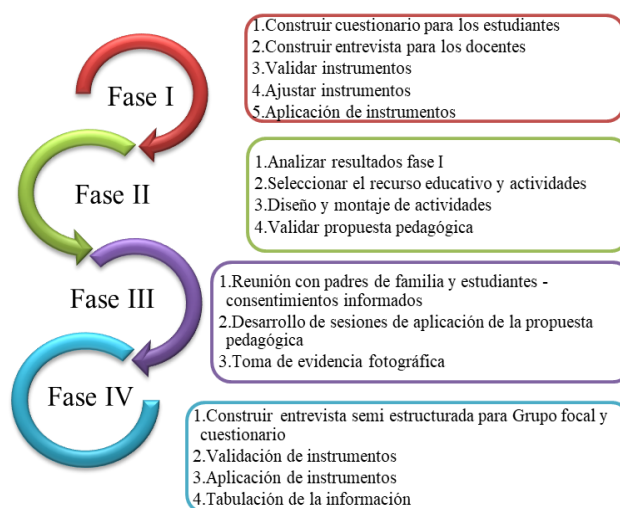


Figura 1. Fases del plan de trabajo

3. Resultados y discusión

A continuación, se relacionan los resultados obtenidos en cada uno de los cuatro objetivos planteados en la investigación.

Resultados del objetivo 1

Para el primer objetivo se aplicó un cuestionario a los estudiantes y una entrevista a los docentes.

Como resultado del cuestionario (parte A) se evidenció que la mayoría de los estudiantes manifiestan tener un gusto hacia las practicas experimentales, pero sorprende que un alto porcentaje de estudiantes nunca han realizado ningún tipo de laboratorio de ciencias naturales, ni de manera presencial, ni de manera virtual (Ver Figura 2). Por otra parte, los resultados de la parte B del cuestionario aplicado a los estudiantes, demostraron un porcentaje de acierto medio en las respuestas, de tal manera que solo 4 de las 10 preguntas estuvieron sobre el 60% de acierto (Ver Figura 3). Las tres preguntas en las que los estudiantes tuvieron menor porcentaje de acierto corresponden a las preguntas 2, 7 y 9 en las que se busca que establezcan relaciones causales y tenga la capacidad de predecir información a partir de los datos presentados, así como que represente de una manera gráfica una hipótesis sobre la relación entre dos variables. Lo anterior evidencia que existen dificultades a la hora de interpretar las relaciones de las variables o seguir la tendencia de datos, lo que representa un asunto complejo, pues requiere de bases o competencias matemáticas. En este sentido, Jiménez, González y Hódar (2008) afirma que la desarticulación entre matemáticas y biología se refleja en las dificultades que tienen los estudiantes para comprender los fenómenos naturales de forma holística.



Figura 2. Pregunta 5 del cuestionario (parte A). ¿Has realizado alguna vez una práctica experimental mediante el uso de un laboratorio virtual en ciencias naturales?

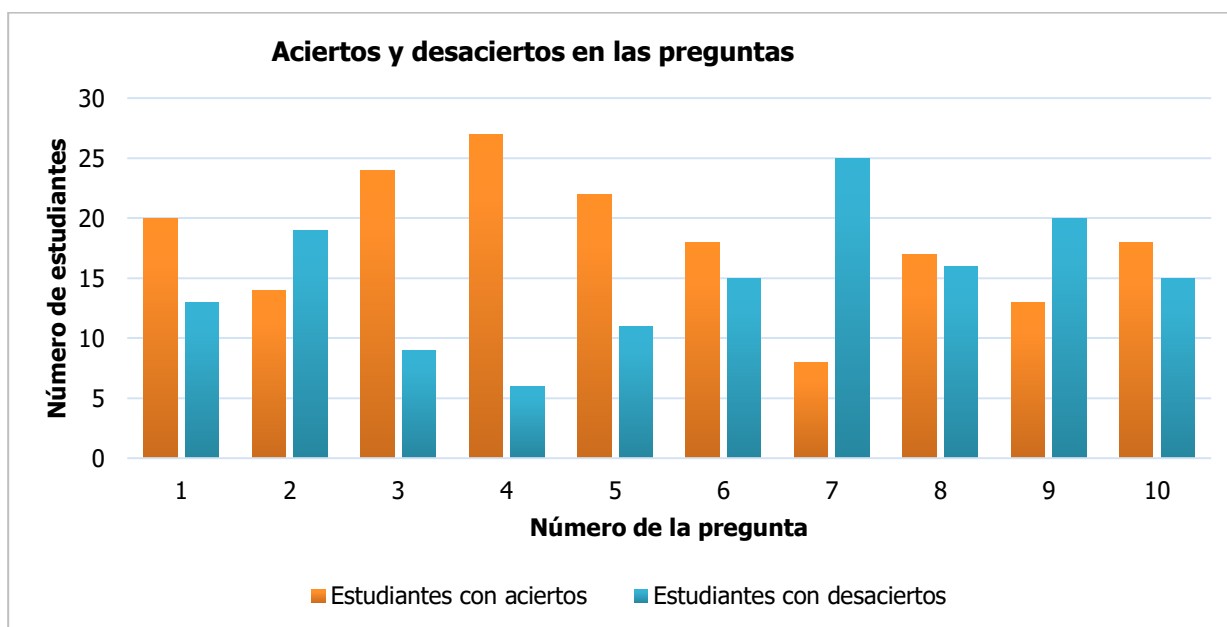


Figura 3. Número de aciertos y desaciertos por pregunta

Los porcentajes en los aciertos obtenidos en la parte B del cuestionario indican que los estudiantes requieren fortalecer sus competencias procedimentales o de indagación, es decir, tienen dificultades para plantearse preguntas y procedimientos adecuados, así como para buscar, seleccionar, organizar e interpretar información relevante que le permita dar respuesta a esas preguntas.

Resultados del objetivo 2

Para el cumplimiento del objetivo 2, se diseñó una propuesta pedagógica basada en una secuencia didáctica, la cual fue validada por un juicio de expertos. La secuencia didáctica construida se basó en la propuesta para la elaboración de una secuencia didáctica planteada por Diaz-Barriga (s.f), quien plantea "Las secuencias constituyen una organización de las actividades de aprendizaje que se realizarán con los alumnos y para los alumnos con la finalidad de crear situaciones que les permitan desarrollar un aprendizaje significativo".

La secuencia didáctica planteaba actividades de apertura, desarrollo y cierre, en las que se destacaba la aplicación de laboratorios virtuales con dos plataformas, CloudLabs y PhET Interactive simulation.

Resultados del objetivo 3

Para el cumplimiento del objetivo 3, se implementó la propuesta pedagógica en dos unidades que abordan las temáticas de factores ambientales de un ecosistema y cambio climático y efecto invernadero.



Figura 4. Actividad de apertura de la unidad 1 - discusión sobre los factores ambientales que inciden en los ecosistemas



Figura 5. Actividad de desarrollo en unidad 1 – laboratorio virtual con la plataforma CloudLabs

Las actividades planeadas en la secuencia didáctica fueron llevadas a cabo en 10 sesiones entre el 24 de mayo y 28 de Julio de 2022. Los estudiantes demostraron interés, trabajo colaborativo y compromiso en el desarrollo de cada una de estas actividades, a pesar de que en algunas ocasiones hubo dificultades con la conexión a internet o en la calidad de la proyección de imágenes o videos.

Resultados del objetivo 4

Para el cumplimiento del objetivo 4, se aplicó la parte B cuestionario a los estudiantes y se realizó una entrevista a un grupo focal de 10 estudiantes.

En comparación con los resultados obtenidos en el cuestionario inicial, en la aplicación del cuestionario final se encontró que en la mayoría de las preguntas los estudiantes tuvieron un mayor porcentaje de acierto (Ver Figura 4).

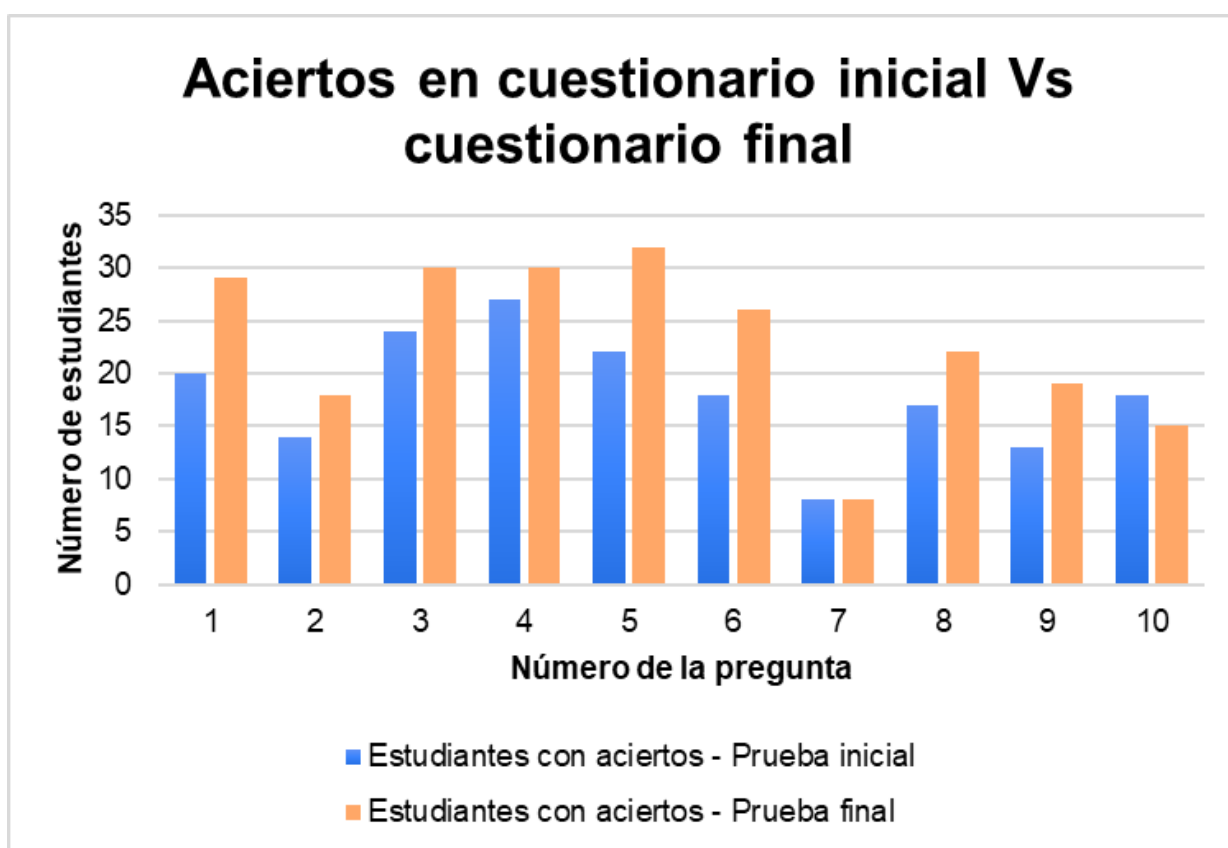


Figura 6. Aciertos por pregunta en el cuestionario inicial y final

Obtener gran número de desaciertos en la pregunta 7 y 10 revela que existe un problema de interpretación de la pregunta o que no se tiene claro cuál es el objetivo de un proceso investigativo ni cómo se organiza y analizan resultados, esto corresponde a la competencia procedimental.

Para el desarrollo de esta competencia es tan importante potencializar la lectura como el componente práctico. Para el caso de la muestra, se hace evidente la falta de espacios prácticos que motiven el planteamiento de preguntas o métodos para resolver problemas, razón por la que se observan deficiencias en esta competencia que no pueden ser resueltas mediante una única intervención.

Sin embargo, tras observar una mejora en los resultados de la aplicación de una prueba tipo ICFES sobre la competencia se confirma que “la práctica de laboratorio es una potente estrategia pedagógica para la construcción de competencias procedimentales” (Infante, 2014, p. 918).

También, los estudiantes relacionaron la actividad realizada con los laboratorios virtuales con procesos de aprendizaje, que les permitió mejorar el entendimiento de situaciones o problemáticas vistas en clase. Ello coincide con los aportes de Monge y Méndez (2007) quienes consideran que los laboratorios virtuales son favorables para la construcción de conocimientos. Además, se generaron espacios de reflexión sobre la importancia del cuidado del medio ambiente y como el ser humano influye en este aspecto, es decir que logran hacer una incorporación de la temática vista en su contexto.

Los estudiantes también indicaron que les gustó más la plataforma de CloudLabs frente a la de PhET, pues les parecía más divertida y llamativa, aunque manifestaron haber aprendido con ambas plataformas. Ello demuestra que, como lo afirma Díaz (2010), la motivación “Es esencial para descubrir el potencial en los estudiantes; es decir, que es más efectivo premiar un buen trabajo o corregir uno no tan bueno, que amenazar con castigar por un trabajo mal hecho” (p.8).

Finalmente, expresaron que la docente los acompañó y estuvo atenta a las dudas o dificultades presentadas por ellos, brindando explicaciones eficaces que les permitió llegar a feliz término en sus prácticas. En este sentido, es importante recalcar que los laboratorios virtuales son una herramienta de apoyo, pues siempre requerirán del acompañamiento del docente, como lo indican López y Tamayo (2012).

Los resultados obtenidos en la entrevista al grupo focal de estudiantes, permiten deducir que la aplicación de la propuesta pedagógica fue de su agrado y contribuyó de una manera amena y dinámica al mejor entendimiento y/o comprensión de las temáticas vistas en clase, de tal manera que lo pudieron relacionar con su contexto y estilo de vida, dicho de otra manera, la aplicación de la propuesta pedagógica contribuyó al aprendizaje significativo y demuestra que esta tiene un impacto positivo en el desarrollo de las competencias procedimentales de los estudiantes.

4. Conclusiones

Pese a que la competencia procedimental es una de las competencias específicas y de vital importancia en el área de ciencias naturales al permitir plantearse preguntas entorno al componente científico y establecer los procedimientos adecuados para dar respuesta a esas preguntas, se encuentra que en primera instancia los estudiantes de grado 8-2 tenían muchas debilidades en ella. Una razón importante es que un gran porcentaje de ellos no había realizado nunca ningún tipo de laboratorio presencial ni virtual, lo cual se vio reflejado en el desempeño básico obtenido en el cuestionario inicial que constaba de 10 preguntas de las pruebas evaluar para avanzar del ICFES.

A pesar de que los docentes de ciencias naturales reconocen que el desarrollo de las competencias procedimentales es muy importante, solo algunos indicaron haber realizado algún tipo de práctica experimental o laboratorio que contribuyera al desarrollo de esta competencia, que por lo general es evaluada mediante la presentación de un informe escrito.

En cuanto a los laboratorios virtuales, aunque los docentes entrevistados manifestaron que son buenas herramientas para fortalecer la competencia procedimental gracias a sus múltiples ventajas reflejadas en la seguridad, innovación, motivación y fácil manejo, son pocos los docentes que han manejado plataformas de laboratorios virtuales, otros desconocen la actualización del portafolio de laboratorios.

La mayoría de los profesores se excusa de no emplear este tipo de laboratorios por problemas de conexión a internet, pocos equipos disponibles cuando han sido requeridos o que las plataformas que conocen no se amoldan a sus necesidades de la clase.

Ante las debilidades que presentaron los estudiantes del grado 8-2 frente a las competencias procedimentales, se diseñó una propuesta pedagógica organizada en una secuencia didáctica, la cual contaba dentro de sus actividades con el desarrollo de laboratorios virtuales para abordar la temática de alteraciones de los ecosistemas.

Las plataformas empleadas para realizar los laboratorios virtuales fueron Cloud Labs con la que se desarrolló el laboratorio virtual sobre los factores ambientales de un ecosistema y PhET Interactive simulation, en que se desarrolló el laboratorio virtual sobre el efecto invernadero.

La propuesta pedagógica fue implementada con éxito y se observó que los estudiantes demostraron interés, participación, trabajo colaborativo y compromiso en el desarrollo de cada una de las actividades propuestas, pese a dificultades con la conexión a internet o en la calidad de la proyección de imágenes o videos. Los resultados obtenidos en la entrevista al grupo focal de estudiantes permiten concluir que la aplicación de la propuesta pedagógica fue de su agrado y contribuyó de una manera amena y dinámica al mejor entendimiento y/o comprensión de las temáticas abordadas, de tal manera que hicieron un proceso de reflexión en torno al aporte o influencia que tiene cada ser humano en los ecosistemas y el planeta en general, lo cual genera un aprendizaje significativo.

Al aplicar el cuestionario basado en pruebas tipo ICFES que permite medir la competencia procedimental después de haber sido aplicada la propuesta pedagógica, se constata que se obtuvieron mejores resultados en comparación con los resultados obtenidos en el cuestionario inicial, por lo cual se puede concluir que la propuesta pedagógica contribuyó al fortalecimiento de las competencias procedimentales.

Aunque la competencia procedimental mostró una mejoría considerable, aún existen debilidades en la interpretación de las preguntas, en la claridad respecto al objetivo de un proceso investigativo en las ciencias naturales, la organización y análisis de resultados, los cuales son procesos propios de la competencia procedimental, como lo evidencian los resultados de las preguntas 7 y 10.

Para solventar las dificultades mencionadas es de vital importancia que el componente práctico y/o experimental esté presente en los planes de aula y en general en el currículo, pues no es suficiente abordar el proceso de enseñanza-aprendizaje en las ciencias naturales únicamente desde el ámbito conceptual o teórico. El proceso educativo necesita que los estudiantes constantemente se vean sometidos a plantearse preguntas y proponer los instrumentos o metodología para resolverlas, es decir requiere constancia, tiempo y voluntad por parte del docente para que busque, analice y aplique diferentes estrategias metodológicas que le permitan al estudiante afianzar esta habilidad o competencia.

Para las instituciones educativas que no cuentan con laboratorios dotados de instrumentación o equipos como la Institución educativa donde se realizó la investigación, pero que tienen algún grado de equipamiento tecnológico, como computadores, tabletas e incluso celulares, los laboratorios virtuales constituyen una valiosa herramienta que dentro de una planeación adecuada pueden brindar muy buenos resultados en la competencia procedimental, además pueden ayudar a desarrollar un aprendizaje significativo y generan una motivación en el estudiante.

El rol del docente siempre será un aspecto clave en los procesos de enseñanza aprendizaje, se requiere que estos tengan la capacitación e interés por llegar a sus estudiantes de una manera novedosa aprovechando el potencial que ofrecen las TIC como es el caso de los laboratorios virtuales en las ciencias naturales.

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La calidad de la escuela en discusión: implementación tecnológica y escolarización inclusiva, dos caras de la misma moneda

The quality of school under discussion: technological implementation and inclusive schooling, two sides of the same coin


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Resumen

Hoy en día la Inclusión Educativa (IE) es un reto de la educación mundial ligado a la implementación tecnológica en las escuelas, donde las competencias digitales docentes (CDD) juegan un papel clave, procurando una disminución de la brecha digital (Chávez & Rodríguez, 2020). En el estudio que se presenta se han analizado estos conceptos mediante grupos focales de profesorado en activo de Latinoamérica y Euskadi (España), resultando la tecnología un aliado para la inclusión educativa, y entendiendo que ambas contribuyen a la calidad de la escuela. Las actitudes y capacidades docentes, junto con las políticas e inversiones de recursos, son aspectos de especial relevancia.

Palabras clave: Inclusión educativa, competencias digitales docentes, escuela, tecnología educativa.

Abstract

Nowadays, Educational Inclusion (EI) is a challenge of global education linked to the technological implementation in schools, where digital teaching skills (DTS) play a key role, seeking a reduction of the digital divide (Chávez & Rodríguez, 2020). In the study presented, these concepts have been analyzed through focus groups of active teachers from Latin America and the Basque Country (Spain), resulting in technology being an ally for educational inclusion, and understanding that both contribute to the quality of the school. Teaching attitudes and capacities, together with policies and investments of resources, are aspects of special relevance.

Keywords: Inclusive education, teachers' digital competence, school, educational technology.



1. Introducción

El presente estudio focaliza la atención en la opinión del profesorado en activo de etapas primarias y secundarias de Euskadi y Latinoamérica que trabajan en centros con un índice alto de vulnerabilidad para conocer de primera mano su percepción y relación entre la inclusión educativa y el desempeño tecnológico docente y como escuela.

Siendo la inclusión educativa un reto mundial para mejorar la calidad en las escuelas y la irrupción tecnológica en la sociedad y escuela una realidad que no se puede obviar, el equipo de investigación de este estudio ha creado cuatro grupos focales que se reúnen en seis sesiones para analizar el impacto que la competencia digital docente y la inclusión educativa contribuyen a la calidad en la escuela.

En la sociedad del siglo XXI existe una estrecha relación entre la inclusión social y la digital (Reyes & Prado, 2020). Según Castro Rodríguez et al., (2019) la escuela está intentando adecuarse a las características de la sociedad y del alumnado actual. Además, la pandemia producida por la COVID-19 ha impactado en la globalidad del sistema educativo siendo las tecnologías de la información y la comunicación muy importantes en este proceso de trasladar las clases presenciales a la modalidad virtual (Cabero & Valencia, 2021). Los docentes han debido adaptar la enseñanza a formatos no presenciales (Rappoport et al., 2020). Así, el aprendizaje virtual ha llegado para quedarse convirtiéndose en un verdadero "tsunami" en la educación (Cabero & Valencia, 2021).

"Este *tsunami* ha transformado las instituciones educativas en todos sus aspectos: en su estructura organizativa y en los roles desempeñados por multiplicidad de actores y herramientas (docentes y discentes, las propias tecnologías digitales, la administración, las editoriales de materiales educativos, la televisión digital, los teléfonos móviles y las redes sociales)" (Cabero & Valencia, 2021, p.219).

Esto valió para ser conscientes de la falta de tecnología en centros educativos, hogares, además de una conexión a Internet inadecuada en algunos casos (Cabero & Valencia, 2021). En el contexto latinoamericano estas dificultades se incrementan por las desigualdades socioeconómicas tanto del profesorado como del alumnado (Rappoport et al., 2020). Según Castañeda & Williamson (2021) la investigación sobre tecnología educativa debe tener un papel tanto social como político incluyendo voces más diversas a nivel mundial y no solo las que se encuentran en el norte.

Las Tecnologías de la Información y la Comunicación (TIC) han afectado a todos los ámbitos de la sociedad, incluido el educativo en el que se han integrado las tecnologías del aprendizaje y del conocimiento (TAC) (Castro Rodríguez et al., 2019). Esto nos lleva al interrogante de qué conocimientos debe integrar un docente en la actualidad, es decir, qué significa ser competente digitalmente. La competencia digital supone un elemento fundamental en la enseñanza obligatoria y en la inclusión social (Castro Rodríguez et al., 2019). Aun existiendo diversidad de definiciones sobre la competencia digital (Castro Rodríguez et al., 2019), es reconocido el papel que el marco europeo DIGCOMP Edu (Punnie & Redecker, 2017) y su antecesor DIGCOMP (Vuorikari et al., 2016) están jugando en la redefinición de las competencias docentes necesarias de docentes y estudiantes para el ejercicio de la ciudadanía digital plena.

Aunque la presencia de las TIC en los centros es evidente, aún no existe un discurso fundamentado con respecto a las aportaciones de la Competencia Digital al desarrollo del alumnado (Castro Rodríguez et al., 2019). El uso adecuado de las TIC sirve como herramienta que favorece la inclusión social (Reyes & Prado, 2020); y facilita los procesos de inclusión de todo el alumnado y en especial del alumnado con Necesidades Educativas Especiales (nee) (Castro Rodríguez et al., 2019). Hoy en día, "no se puede hablar de educación inclusiva en el siglo XXI sin hablar de diseño universal de aprendizaje" (Elizondo Carmona, 2020).

En definitiva, existe una necesidad de formar docentes que tengan habilidades para integrar la tecnología y la pedagogía (Beltrán-Sánchez et al., 2019), para que la formación, ya sea presencial o a distancia, sea de calidad (Cabero & Valencia, 2021). Así, resulta necesaria la formación inicial y permanente para atender a la diversidad del alumnado en la escuela inclusiva (Lozano-Martínez et al., 2021). Por ejemplo, se debe considerar que en algunos gobiernos latinoamericanos se continúa sin diferenciar la integración y la inclusión (Reyes & Prado, 2020). Llantén et al., (2020) reconocen que las políticas chilenas han intentado impulsar la inclusión en las aulas sin considerar que la exclusión supone un fenómeno que sobrepasa las fronteras del aula y de la escuela.

2. Metodología

La metodología empleada en este estudio es cualitativa (Erickson, 2012) y concretamente mediante grupos focales (Bourne & Winstone, 2021).

La pregunta de investigación (QR) es: **¿En qué medida la CDD y la Inclusión Educativa contribuyen a la calidad en la escuela?**

Para abordar esta cuestión y que cobre sentido, se consideró necesario realizar una aproximación al entendimiento que los grupos consultados refieren sobre la inclusión educativa y qué competencia digital docente es necesaria para desarrollarla. De este modo, se partió de un primer diálogo para abordar la pregunta de investigación (QR).

Esta convergencia de factores (perfil, estudios, etapa, centro en situación de vulnerabilidad) en contraposición al origen, realidad social y política que difiere centros de Euskadi con los estudiados en el caso conectandoescuelas.org de Latinoamérica, arroja una oportunidad para profundizar en los aspectos que hasta ahora se han investigado sobre inclusión educativa (IE) y competencias digitales docentes (CDD). Es por este motivo, que la investigación participativa y dialogada sobre las cuestiones clave, su transcripción, categorización y análisis nos han permitido realizar un contraste real de los aprendizajes previos.

Grupos Focales

Mediante el grupo focal se busca aportar un entendimiento del yo colectivo (Sim & Waterfield, 2019). Se trata de recoger las voces de docentes de aula de forma espontánea.

Debido a la amplitud de las áreas de estudio, era clave centrar el debate en la pregunta de investigación, de forma que se realizó un esfuerzo importante en diseñar una metodología de reunión, turnos de palabra y moderación guiada que condujeran a dar respuesta a la cuestión tractora.

Dado que el colectivo con el que trabajamos mayoritariamente en el caso de estudio se enmarca en centros escolares con índices altos de vulnerabilidad, se identificó profesorado de escuelas con estas condiciones, en el caso de Euskadi optando por centros públicos con un nivel de inmigración o ubicados en zonas desfavorecidas, y en el caso de Latinoamérica, centros de la red Fe y Alegría.

Conformación de los grupos

La conformación de las personas participantes de los grupos se realizó a través de profesorado que ha participado en conectandoescuelas.org así como a través de la invitación abierta de las personas que forma el equipo de investigación. Se han creado cuatro grupos de cuatro-seis personas en base a las etapas educativas y origen de los centros, constituyéndose de la siguiente manera:

- Grupo focal primaria Latinoamérica, acrónimos de participantes: PL1, PL2, PL3, PL4
- Grupo focal primaria Euskadi, PE1, PE2, PE3, PE4, PE5, PE6
- Grupo focal secundaria Latinoamérica, SL1, SL2, SL3, SL4
- Grupo focal secundaria Euskadi, SE1, SE2, SE3, SE4

Desarrollo de las sesiones

Los grupos focales se desarrollaron en dos etapas, una inicial en octubre 2021 y otras sesiones de contraste en enero-febrero 2022. Las reuniones se realizan mediante herramienta de videoconferencia con una duración de 90 minutos.

En la sesión inicial, tras la bienvenida, agradecimiento y presentación de los miembros reunidos, se plantearon 4 bloques de cuestiones que nos fueron acercando al núcleo de la cuestión.

Tabla 1.

Preguntas para fomentar el diálogo

CI₁	¿Qué entiendo por escuela inclusiva? ¿Qué hace que mi escuela/instituto sea inclusivo?
CI₂	¿Qué entiendo por ser competente digitalmente como profesor/a?
CI₃	¿Qué nivel de competencia digital es necesario para ser inclusivo/a en la escuela? ¿Estos aspectos mejoran la calidad en la escuela?

Fuente: Elaboración propia

En las sesiones de contraste partimos de la información clasificada en cuatro categorías en un formato informe y se comentan y refuerzan o debaten cada uno de los aspectos.

Para dinamizar y desarrollar estas sesiones participaron dos personas del equipo de investigación que trabajaron en colaboración para moderar la sesión y orientar el debate a las cuestiones planteadas.

Tratamiento y análisis de la información

Las grabaciones de las conversaciones realizadas en los grupos focales se han transcrito y analizado mediante el software NVIVO v.1.2., categorizando la información emergente en 5 bloques: sociedad tecnológica, inclusión social y educativa, competencias digitales docentes, implementación tecnológica y un último bloque sobre retos y oportunidades. Se han identificado los atributos de las personas discriminando los grupos así como sus perfiles profesionales y años de experiencia.

3. Resultados

Las palabras clave más utilizadas en los grupos se pueden visualizar en esta nube de etiquetas, siendo las de color naranja las que en más ocasiones se han mencionado, en un segundo nivel en negrita negra y de manera descendente en tamaño las siguientes.

Se considera también que optar por un trabajo inclusivo en la escuela y avanzar en ello nos permitirá que las personas *"vayan con unos valores o con unas pinceladas de lo que podría ser la inclusión en la sociedad"* (SE3).

Tanto en los grupos de Latinoamérica como en los de Euskadi se considera mayoritariamente que la escuela inclusiva tal y como se formula es aún un deseo no hecho realidad y la implementación tecnológica no está diseñada para la atención a la diversidad si no como una respuesta estándar y global que a priori no va permitir mejorar las cotas de participación y éxito de todo el alumnado. (SE1, SL2). Deseo y realidad distan bastante y se plantea nuestra aportación al respecto.

¿Somos realmente inclusivos?

En primer lugar, varias personas que participan en los grupos se plantean la posición que la escuela y sus profesionales adoptan ante la diversidad:

"La escuela muchas veces fracasa, porque mucho alumnado inmigrante, se han citado, por ejemplo, los árabes. Los árabes vienen de una cultura muy diferente a la nuestra, pero que es con unos valores muy profundos también, y no se les está dando la oportunidad de, bueno, de expresar esos valores, o sea, la escuela yo creo que es ciega y sorda a todo el mundo árabe, por ejemplo. Entonces eso también dificulta bastante la integración y la inclusividad, no sé. Eso es, sin más, que se hace desde un modelo asimilativo, vamos, o sea, sin más" (SE1).

Consideramos realmente que la inclusión educativa, a nivel teórico, es el mejor paradigma sobre el que construir escuela de calidad, sin embargo, hoy por hoy es una inclusión desde la adaptación al modelo dominante, mayoritario, enfocado a resultados académicos y a estándares pre-establecidos.

En segundo lugar, y en referencia a las discapacidades que se encuentran en el aula (discapacidad visual, auditiva, etc.) SL1 aporta *"vamos aprendiendo braille, o lenguaje de signos tanto alumnado como profesorado, a la vez que buscamos apoyo psicopedagógico"*.

Una tercera cuestión que se menciona en diferentes grupos es en la que se encuentran algunos centros *"gueto"* que tienen un nivel de diversidad tan alto en el que deben cambiar la dinámica y prioridades, en algunos casos dejando prácticamente de lado los contenidos para avanzar mediante proyectos en aspectos más prioritarios como la convivencia o las necesidades básicas que los menores deben ir cubriendo para poder desenvolverse en la sociedad.

Lo que funciona para la inclusión

En todos los grupos se identifica en los cambios metodológicos un aliado para la escuela inclusiva, optando por metodologías activas, participativas, la creación de grupos interactivos, entendiendo que *"para nosotros innovar no es hacer algo nuevo, eso no es innovar; innovar es hacer algo para que se consiga la mejoría de todo el alumnado"* (PE5).

La flexibilidad en las programaciones, el trabajo en equipo, los apoyos externos al centro y la socialización de trabajos también hacen que la escuela sea más inclusiva, optando por participar dos docentes de forma simultánea en el aula y evaluando de forma constante el ritmo de aprendizaje, así como el clima de aula y el bienestar de todas las personas que conforman este proceso (PE5, SE2, SE3). Una inversión mayor de recursos también nos permitiría construir escuela inclusiva.

En la CI2 sobre qué consideramos qué es ser competente digitalmente nos encontramos con que prácticamente ningún docente se siente capacitado al 100%. Una de las ideas que surge en varios grupos es que aprender a aprender es una clave con la que no hemos dado aún:

"Hemos hecho muchísimos cursos pero no hemos dado con la llave para que el alumnado investigue por su cuenta... transmitir cómo hacer en digital a los compañeros es muy complicado. Nosotros somos al final imagen de lo que ellos pueden ser en el futuro y por eso que debemos ser una buena referencia" (PE3).

Otra idea que cobra fuerza sobre qué es ser competente digitalmente tiene que ver con la actitud, jugando el miedo un papel muy importante *"El profesor será competente digitalmente si no tiene miedo a empezar, a equivocarse"* nos indica SE4, en la misma línea indica PL3 *"Lamentablemente seguimos tropezando pero hay que seguir"*.

En la CI3, qué nivel de CDD debemos tener y tendrá repercusión en la calidad de la escuela, más allá de las competencias específicas digitales a desarrollar, o de la profundidad del manejo tecnológico, el profesorado hace hincapié en la necesidad de garantizar accesibilidad para todo el alumnado, lo que requiere:

- Actualizarse constantemente, porque las herramientas cambian y las casuísticas y perfiles de alumnado también, no hablamos de incluir a una persona con unas características específicas si no a todas en su diversidad (PE1).
- Aprender a manejar las plataformas de videoconferencia, acompañando al alumnado y sus familias a hacerlo (SL3).
- Generar mensajes muy claros identificando tareas, herramientas, de forma específica y clara (SL4).

En respuesta al impacto que las CDD tienen en la calidad de la escuela se apunta a que si se integran herramientas y competencias digitales será más probable que puedas hacer mejor el trabajo (SE3) por lo que aún tímidamente se identifica la tecnología educativa como una realidad que debemos integrar para la mejora de la escuela.

4. Discusión

En los grupos se han identificado muchas **dificultades** ligadas a aspectos socio-económicos (Rappoport et al., 2020), pero por el perfil de centros y alumnado no se han detectado diferencias a este nivel. Una de las dificultades más recurrentemente señaladas está relacionada con la escasez de **recursos** y el papel clave que juegan, si no existen ordenadores de calidad, conexión a internet, no se puede hablar de tecnología al servicio de la escuela inclusiva. En esta misma línea, el recurso del tiempo del profesorado y el esfuerzo que supone adaptarse son aspectos que dificultan el avance en la innovación educativa. En varios grupos se comenta que los procedimientos y burocracia son realmente complejos y tediosos, dificultando aún más la integración de la tecnología educativa en la escuela (Cabero & Valencia, 2021).

Hay resistencias en las personas. *"Algunos papás se cierran, hay familias que no quieren"* (PL3). *"Algunos docentes también se cierran, es más cómodo no cambiar"* (SE2). *"Es un reto muy muy grande y más aún si en nuestras aulas hay niños con discapacidad"* (SL2).

En varios grupos se indica que es una **oportunidad** digitalizar materiales propios y crear los nuestros en repositorios compartidos, por ejemplo, en *Google Drive*. Es importante buscar probar, equivocarse, volver a empezar; optar por plataformas compartidas que aporten valor a la red, tipo Recursos Educativos Abiertos (REA).

Se considera que para estar incluido hoy en día en sociedad se deben desarrollar unas competencias digitales, coincidiendo con Castro Rodríguez et al., (2019) al subrayar que la escuela debe adoptar un papel protagonista en la adquisición crítica de estas formas de aprender y relacionarse que van más allá de conocer el manejo de plataformas.

En general nuestro estudio refuerza la idea que Trujillo Sáez (2021) recoge en su informe sobre la situación educativa de los centros en el regreso a la presencialidad tras la COVID19, ya que el profesorado que participa en este estudio se considera satisfecho con el esfuerzo realizado, pero está preocupado por la dificultad que supone incluir a todo el alumnado con los recursos existentes.

Uno de los aspectos que cobra más importancia es adoptar una visión crítica de la implementación tecnológica y como indican Kisbu-Sakarya & Doenyas (2021) atender las actitudes que el profesorado muestra ante la integración tecnológica en colectivos especialmente en situación de vulnerabilidad. La formación o capacitación docente es importante (Lima et al., 2020; Lozano-Martínez et al., 2021), pero es crucial motivar este cambio e ilusionarse con la transformación, como han apuntado Kisbu-Sakarya & Doenyas (2021) en su estudio. Aunque el colectivo docente es el sujeto de transformación (Beltrán-Sánchez et al., 2019), consideramos que sin una inversión y planificación más robusta y de acuerdo con Castañeda & Williamson (2021) descentrada de empresas, el avance en los parámetros de calidad entendida para todas se antoja realmente complejo.

5. Conclusiones

El profesorado ha realizado un esfuerzo increíble por adaptarse a la tecnología desde una visión holística de la escuela y atendiendo a criterios de accesibilidad de todo el alumnado. Somos conscientes de que la pieza angular del sistema está en los equipos docentes, por lo que es importante considerar como una inversión aprender a manejar la tecnología educativa. Además, el colectivo en situación de vulnerabilidad o con NEE ha sufrido especialmente las consecuencias de la no presencialidad, poniendo de manifiesto las lagunas que el sistema educativo muestra ante estas situaciones.

El Diseño Universal de Aprendizaje es hoy por hoy el paradigma metodológico que nos permitirá adaptar nuestra metodología y tecnología a la diversidad, y en Euskadi se comienza a implantar este modelo, ofreciendo más oportunidades a la inclusión desde el refuerzo de las capacidades diversas y optando por recursos innovadores y motivantes como videojuegos en los que el alumnado que tradicionalmente ha tenido dificultades de participación encuentra nuevas oportunidades.

Las políticas e inversiones educativas en las que pongamos la tecnología educativa y las CDD al servicio de todas y todos redundarán en la creación de escuelas realmente inclusivas y por tanto en la calidad de las mismas.

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The role of distance education in the training of specialists

El papel de la educación a distancia en la formación de especialistas


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Abstract

The article shows the role of distance learning in the training of specialists to constantly update the educational process, where the ultimate goal should be the self-development of the student of higher education and the constant disclosure of his individual capabilities. The importance of distance learning of students as a component of the educational process in a vocational education institution is determined, distance learning in the preparation of specialists is considered a type and component of educational activity, as a mechanism for the transformation of educational activity into an educational and professional one, as an organization "at a distance" of a high-quality educational process with open access to educational resources and the use of the latest information and communication means of learning. Characteristic features of distance learning are highlighted. Forms of distance learning are considered: correspondence

and telecommunication. The positive characteristics of distance learning are grouped. The negative characteristics of online education are emphasized. The positions of the dynamics of distance learning development are analyzed. The stages of the introduction of distance learning in institutions of higher education are shown. The main requirement for distance learning at present is to ensure its effectiveness.

Keywords: distance learning, training of specialists, renewal of the educational process, self-development of the student of higher education, disclosure of individual opportunities of students.

Resumen

El artículo muestra el papel de la educación a distancia en la formación de especialistas para la actualización constante del proceso educativo, donde el objetivo final debe ser el autodesarrollo del estudiante de educación superior y la divulgación constante de sus capacidades individuales. Se determina la importancia de la educación a distancia de los estudiantes como componente del proceso educativo en una institución de educación vocacional, se considera la educación a distancia en la formación de especialistas como un tipo y componente de la actividad educativa, como mecanismo para la transformación de la actividad educativa en una educativa y profesional, como organización "a distancia" de un proceso educativo de alta calidad con acceso abierto a los recursos educativos y el uso de los últimos medios de información y comunicación para el aprendizaje. Se destacan los rasgos característicos de la educación a distancia. Se consideran formas de educación a distancia: correspondencia y telecomunicaciones. Las características positivas de la educación a distancia se agrupan. Se enfatizan las características negativas de la educación en línea. Se analizan las posiciones de la dinámica del desarrollo de la educación a distancia. Se muestran las etapas de la introducción de la educación a distancia en las instituciones de educación superior. El principal requisito para la educación a distancia en la actualidad es garantizar su eficacia.

Palabras clave: educación a distancia, formación de especialistas, renovación del proceso educativo, autodesarrollo del estudiante de educación superior, divulgación de las oportunidades individuales de los estudiantes.

1. Introduction

The new generation of young people are people with creative thinking because today's society needs such individuals in connection with the current stage of human development. Therefore, the central figure of education and reformation of the entire system of higher education in the global dimension is the student of education, and his education is aimed at the recognition of the individual with the constant development of his cognitive activity. This approach involves the constant updating of the educational process, where the ultimate goal should be the self-development of the higher education seeker's personality and the constant disclosure of individual human potential. One of the necessary directions for the development of modern higher education is the application of distance learning technologies in the educational process. Nowadays, a huge bet is made on distance education, which is called an important educational system of the 21st century.

The relevance of distance learning and the problems of its application lies in the results of the process of social development, which were previously concentrated in the technological sphere, and today are concentrated in the information sphere.

Professional knowledge needs constant improvement, which becomes old very quickly, in connection with the progress and informatization of mankind, and it is necessary to update it. And it is the remote form of education that enables the general exchange of information, the mass creation of self-learning systems during a person's life, which can respond most flexibly and adequately to the needs of society to train

competitive specialists and is the most effective system of training and continuous self-education of highly qualified specialists in various industries and fields (Adamova & Holovachuk, 2012).

Social changes, comprehensive digitization, and political and economic innovations taking place in the world emphasize the need to reform the education sector. First of all, it concerns the provision of high-quality educational and professional training of all individuals to develop human abilities and adequate preparation and satisfaction of the educational needs of citizens throughout their lives. And it is distance learning that contributes to the most effective solution to the above-mentioned problems. Therefore, the application of distance education in the educational process is an important stage of adaptation of the educational field to modern conditions (Nalivayko & Martsenyuk, 2020).

2. Literature Review

O. Mukoviz (2018) shows the role of theory and the practical component of the application of distance learning technologies in the system of continuous education; foreign and domestic experience of using distance learning in institutions of higher education was studied; the most important models of distance learning implementation are substantiated and singled out, and the pedagogical conditions of the didactic foundations of the distance learning organization are proposed in the system of continuous education of specialists. Features of working with a distance course created in the Information and Educational Environment of the University (<http://dls.udpu.org.ua>) are shown; A website of the continuing education system (<http://sno.udpu.edu.ua>) has been created for educators, which will help to carry out distance learning.

L. Shtefan & O. Borzenko (2015) analyzed the features of the use of distance learning for applicants of higher education in Canada; based on the source base, the origins of distance learning of higher education applicants are characterized; the stages of formation and development of the organization of distance learning of higher education seekers in the second half of the 20th century in Canada are substantiated from a scientific point of view; the possibilities of creative use of progressive ideas of Canadian higher education at the modern stage are shown.

V. Yagupov, L. Petrenko & S. Kravets (2019) revealed the conceptual principles of distance learning of future specialists in educational institutions; substantiated the principles of the distance form of education, developed methodological approaches to the system of professional and technical education; described the concept of training qualified workers in educational institutions using distance education; proposed methodical principles for the training of specialists for the implementation of distance learning in the workplace; substantiated the development of specialists' readiness for the implementation of distance learning throughout life; described the method of training specialists using remote training of employees of various industries; ways of creating distance courses for the educational process are shown.

O. Ryazantseva (2016) substantiated the ways of high-quality training of specialists in the distance education system, showed their importance at the workplace of a specialist; proved the advantages of distance education at the modern stage, which involves the possession of a number of competencies and requires knowledge, special skills, and teacher skills; the effectiveness of communicative interaction of students of higher education during the effective transfer of information in the distance education system has been proven; the ability of the teacher is specified using methods of systematization of theoretical knowledge and analysis, which effectively promote communication in the distance education system; tips are written for use when developing the content of professional training courses in institutions of higher education, when writing manuals (methodical and educational) aimed at preparing specialists for the organization of the educational process in the distance learning system.

L. Nalivayko & L. Martsenyuk (2020) shows the ways of organizing the distance form of education, define its main aspects in the face of constant digitalization, and social, economic, and political changes that necessitate the reform of the education system and take place in the global space. An effective solution for providing effective ways of the educational field is facilitated by distance learning, in particular, to ensure access to high-quality, modern, innovative, and professional training for those who have the necessary abilities in a certain direction, to ensure the educational needs of individuals throughout their lives; the peculiarities of the use of world-class electronic platforms are revealed, the methods of organization and the essence of distance learning for the organization of an innovative form of education in different world spaces are analyzed; indicators of sociological monitoring of higher education applicants regarding the organization of the educational process through the implementation of distance learning were recorded; the satisfaction of education seekers with the quality of distance learning organization has been proven. The innovative positive characteristics of distance learning are shown (a convenient system of consultations; savings on transportation costs; convenience without interrupting the regularity of work and organization in the training of employees; extraterritoriality; the need for the use of information tools in everyday life for young people; simplicity and accessibility of education; increasing the number of students; individual pace training; the new status of the teacher; democratic relations between the student of higher education and the teacher; low level of payment for distance education compared to traditional). The negative features of online education are listed (authentication of the copyright of educational materials and users during knowledge verification, calculation of the methodical load of the teacher; high cost of equipment for distance learning; high labor intensity of developing innovative educational content; the obligation to provide students with access to the Internet and a personal computer, the need for constant search and application of innovative and effective motivational mechanisms for students of education.

A. Kuzminskyi, O. Kuchai, O. Bida, A. Chichuk, I. Sigetii, & T. Kuchai (2021) examined the peculiarities of training specialists in higher education institutions in the conditions of distance learning. The characteristic features of distance learning are highlighted, its advantages are shown, and the necessity of introducing distance learning technologies into the educational process is shown. The importance of measures to support distance teaching and learning, in the process of effective pedagogical support, is emphasized. The role of high-quality training of teachers, who must be well prepared for implementing distance learning, and management of the range of IT devices, is shown.

The purpose of the article: to show the role of distance learning in the training of specialists to constantly update the educational process, where the ultimate goal should be the self-development of the student of higher education and the constant disclosure of his individual capabilities.

3. Methodology

In order to solve the tasks and realize the goal of the research, research methods were used: theoretical: analysis of psychological, philosophical, methodological, pedagogical literature, documents of the regulatory framework and scientific works on the researched topic with the aim of revealing the role of distance learning in training specialists with the aim of constantly updating the educational process, where the ultimate goal should be the self-development of the student of higher education and the constant disclosure of his individual capabilities; modeling method for structuring the distance learning system in the training of specialists; structural and systemic method for substantiating the author's vision of the researched problem; a generalization method for formulating recommendations and conclusions regarding the introduction of a quality organization of distance learning in the training of specialists; empirical – study and analysis of the main provisions of distance learning in the preparation of specialists to characterize the state of the investigated problem; observational methods (targeted observation of the activities of teachers and students during distance learning during the training of specialists); self-assessment, self-analysis to check the effectiveness of the distance learning system in the training of specialists.

The research is based on the premise that distance learning in the training of specialists is the main factor for the constant renewal of the educational process, where the ultimate goal should be the self-development of the student of higher education and the constant disclosure of his capabilities, and is based on the development of value-meaningful attitudes towards the future profession, individual style of professional activity of a specialist and can be formed to update the educational space of a higher education institution on a systemic and integrative basis. This approach leads to the implementation of scientific research by methodological, theoretical-pedagogical, and technological concepts.

The methodological concept ensures the interaction and interconnection of innovative scientific approaches as a search strategy for the introduction of distance learning in the training of specialists to constantly update the educational process, where the ultimate goal should be the self-development of the student of higher education and the constant disclosure of his individual capabilities, namely:

- axiological, for the orientation of the forms, content, and methods of distance learning in the preparation of specialists in the field of value orientation to constantly update the educational process, where the ultimate goal should be the self-development of the student of higher education and the constant disclosure of his individual capabilities and the formation of value orientations of the individual;
- systemic, which ensures the perception and research of the process of distance learning in the training of specialists with the aim of constantly updating the educational process, as an open multicomponent system and a holistic system that develops and constantly changes with the help of internal and external factors (the internal emotional instructions of the individual towards the profession, the system of attitudes for the performance of professional activities determined by the requirements of the education system and the public demand of the world); expands the scientific knowledge of the structural and component manifestation of distance learning in the training of specialists with the aim of constantly updating the educational process, where the ultimate goal should be the self-development of the student of higher education and the constant disclosure of his individual opportunities in development and dynamics, reveals the integrative characteristics of distance learning in the training of specialists in the researched process;
- synergistic, which affirms the constant disclosure of individual opportunities to activate one's forces, the idea of self-organization of the individual, the development of distance learning in the preparation of specialists, focusing on the importance of constant renewal of the educational process, where the ultimate goal should be the self-development of the student of higher education, the initiation of individual educational trajectories, the formation of his professional the positions of specialists under the condition of constant updating of the educational process and constant disclosure of the individual capabilities of the individual;
- acmeological, which allows one to theoretically understand the essence of distance learning in the training of specialists to constantly update the educational process, where the ultimate goal should be the self-development of the student of higher education and the constant disclosure of his individual capabilities;
- interdisciplinary, which ensures the integrity of distance learning in the preparation of specialists, the formation of the professional position of the future specialist to constantly update the educational process, where the ultimate goal should be the self-development of the student of higher education through the interdisciplinary integration of knowledge, reflecting the complexity of the studied phenomenon, the constant disclosure of the individual capabilities of the student of higher education, integrative nature of such education;
- subject, which contributes to the expansion of distance learning in the training of specialists, contributes to the constant disclosure of the individual capabilities of specialists and innovative content-meaningful filling of the educational process with methods, forms, means of innovative interaction of its participants, is the basis for the further development of distance learning in the training of specialists with the aim constant updating of the educational process, activity, and professional position of the

- student, where the final goal should be the self-development of the student of higher education and the constant disclosure of his individual capabilities as a subject of activity;
- competence-oriented, subject-cultural, intellectual, general professional development of the future specialist during distance learning during the innovative training of specialists to constantly update the educational process, where the ultimate goal should be the self-development of the student of higher education as a condition for the success of his professional position, formation innovative skills, attitude, experience, knowledge, skills that reflect the readiness of the future specialist for professional growth, professional activity, mastering the methods of distance education throughout his life;
 - personal-activity, which directs the prioritization of the student's interests and needs to the professional aspect, is based on distance learning in the preparation of specialists to constantly update the educational process, a dialectical combination of the tasks of the professional training of the future specialist with his trajectory of the development of personal and professional qualities and self-realization, where the main there is a professional remote position of a person.

The theoretical and pedagogical concept includes the main definitions (psychological, philosophical, pedagogical, sociological) for a holistic understanding of the essence and characteristics of the phenomenon of distance learning and defines its role in the training of specialists to constantly update the educational process, where the ultimate goal should be the self-development of the student of higher education and constant revealing his individual capabilities.

The technological concept provides for the development of a distance learning system for high-quality training of specialists for the constant renewal of the educational process with the ultimate goal of self-development of the student of higher education and constant disclosure of his individual capabilities regarding the professional position of the future specialist, which accumulates technologies, pedagogical conditions aimed at ensuring the positive dynamics of distance learning in the training of specialists, which is based on a diagnostic basis.

4. Results and Discussion

In the spring of 2020, as a result of the introduction of the quarantine regime in institutions of higher education, a situation arose that led to the transformation of distance learning in the educational space into the status mandatory from the status possible. The technical and software possibilities of distance learning in the training of specialists to constantly update the educational process, where the ultimate goal should be the self-development of the student of higher education and the constant disclosure of his individual capabilities led to the optimization of distance learning, which ensured the development of online technologies, for example, it was proposed to hold Zoom conference line. Among the teachers, objectively there was a need for distance learning in the preparation of specialists, and the creation of information products for constant updating of the educational process, where the ultimate goal should be the self-development of the student of higher education and the constant disclosure of his individual capabilities. This approach has become necessary for teaching distance courses in individual academic disciplines (Vyshnevskaya & Vyshnevsky, 2020). Distance education is a necessary open system of education in our time, which gives freedom to choose the time, the pace of study, and place of study, thanks to the Internet, which is becoming an important factor in the development of society and covers wide sections of the population. Distance learning provides educational space applicants with the possibility of online video lectures, constant support of teachers and methodologists, their consultation, continuous access to educational materials, virtual simulators, and other technological solutions for innovative learning to ensure an effective educational process (Shtychno, 2016).

The definition of distance learning of students as a component of the educational process in a professional education institution to constantly update the educational process, where the ultimate goal should be the self-development of the student of higher education and the constant disclosure of his capabilities, includes all its types (auditory work, extra-auditory work under the guidance of a teacher, independent classroom work,

individual work outside the classroom), allows to consider distance learning in the preparation of specialists as a type and component of educational activity (types of classroom and self-education along with educational and educational and production practice), which ensures the formation of professional competencies in the process of professional training. Therefore, distance learning in the modern context is considered as a mechanism of transformation of educational activity into educational and professional activity. The effectiveness of this transformation is due to the value of the chosen specialty, the personal motives of professional education, and the formation of the skills of educational independent activity of the students of education (Akhromov & Bobrova, 2021).

The goal of implementing distance learning in institutions of higher education in the training of specialists to constantly update the educational process, where the ultimate goal should be the self-development of the student of higher education and the constant disclosure of his capabilities, is the organization of a high-quality educational process "at a distance" with open access to educational resources and the use the latest information and communication means of education. It is this form of education that quickly adapts to the requirements of the information society and provides quality education to the future specialist. In a higher educational institution, it is innovative distance education in combination with traditional forms of education that can provide a high-quality range of educational services for both students and applicants to acquire professional skills and abilities for future professional activities, as well as be useful and necessary for improving qualifications for teachers (Vasylychshen, 2022).

Let's highlight the characteristic features of distance learning (Mukoviz, 2018):

1. Flexibility: training in the preparation of distance education specialists, to constantly update the educational process, where the ultimate goal should be the self-development of the student of higher education and the constant disclosure of his individual capabilities, takes place at a time convenient for students and in a place convenient for them and does not offer regular class attendance.
2. Modularity: the modular principle is the basis of the distance learning program; a holistic view is created about a separate subject area by each separate course, which leads to a set of independent courses-modules to form an educational program that meets the group or individual needs of the student.
3. Large audience: simultaneous appeal during distance learning in institutions of higher education during the preparation of specialists to many sources of educational information of a large number of pupils, students, and listeners, to constantly update the educational process, where the ultimate goal should be the self-development of the student of higher education and constant disclosure of his individual capabilities and communication with the help of students' telecommunications between themselves and with teachers.
4. Parallel training: parallel training is carried out at the same time as professional activity (another type of activity takes place without breaking away from production).
5. The new role of the teacher: distance learning in institutions of higher education during the training of specialists expands the role of the teacher and updates it, making him a consultant, a mentor who increases creative activity, constantly improves the courses he teaches, coordinates the cognitive process and relates to innovations in a qualified and responsible manner and innovations.
6. Cost-effectiveness: effective use of educational spaces and technical means during distance learning in institutions of higher education in the training of specialists, use and development of computer modeling, and unified and concentrated presentation of innovative information helps to reduce the costs of training specialists (Adamova & Holovachuk, 2012).
7. Social equality: equal opportunities for obtaining education during distance learning in institutions of higher education during the training of specialists regardless of social status, place of residence, and health status.
8. Technological: the use in the educational process of new achievements of information technologies, in particular, distance learning in institutions of higher education in the training of specialists, which

contributes to the entry of a person into the global information space, the constant renewal of the educational process with the ultimate goal of self-development of the student of higher education.

9. Internationality: the opportunity to obtain distance education in higher educational institutions of foreign countries without leaving one's country, and in institutions of higher education with the training of specialists to provide educational services to compatriots living abroad and foreign citizens with the aim of self-development of a higher education seeker and permanent revealing his capabilities.
10. Quality: distance learning in institutions of higher education in the training of specialists is not inferior to the quality of face-to-face education, since the goal is the constant renewal of the educational process, where the ultimate goal should be the self-development of the student of higher education and the constant disclosure of his individual capabilities, and the most modern educational methods are used for the training of specialists -methodical materials, the latest didactic tools, the best teaching staff is involved.
11. Positive influence on the student of higher education: increasing the intellectual potential of a person and his creativity, who acquires distance education thanks to the use of telecommunication technologies, modern information innovations, the desire for self-organization, knowledge, and the ability to make responsible decisions independently.
12. Monitoring: mandatory implementation of specialized quality control of distance learning for its compliance with educational standards is envisaged for constant updating of the educational process (Hryniuk et al., 2021).

There are two forms of distance learning: correspondence and telecommunication.

In the process of the correspondence form, distance education students are physically separated from the teacher to constantly renew the educational process, where the ultimate goal should be the self-development of the student of higher education and the constant disclosure of his capabilities; there is a division in the time of the student and the teacher.

The telecommunications form of distance learning, where the ultimate goal should be the self-development of the student of higher education and the constant disclosure of his capabilities, involves classes with small groups of students connected to the network in real-time and located in different places (Barker et al., 1989). The transition of higher education institutions to distance learning, in which students receive distance education, where the ultimate goal should be their self-development and constant disclosure of individual capabilities, is an impetus that causes various problems in the educational environment, but at the same time provides an opportunity to make global education competitive, innovative and quality. It is distance learning that provides the possibility of constant renewal of the educational process, where the ultimate goal should be the self-development of the student of higher education and the constant disclosure of his individual capabilities, increases the efficiency of independent work, opens access to non-traditional sources of information for students of education.

The implementation of distance technologies for constant updating of the educational process is aimed at the formation of communicative and informational competencies of distance education students for self-development and constant disclosure of individual capabilities, as well as the ability to self-educate.

Let's group the positive characteristics of distance learning:

- availability of training;
- extraterritoriality;
- the interest of distance education students in using modern informational means;
- savings on transport costs;
- a convenient counseling system, where the ultimate goal should be the self-development of a student of higher education;

- increase in the number of students;
- individual learning pace and continuous disclosure of individual student capabilities;
- democratic relations between student and teacher;
- convenience for companies and organizations in training their employees without breaking away from regular work;
- the new status of a teacher in distance education of students.

Let's emphasize the negative characteristics of online education:

- user authentication during monitoring the achievements of education seekers;
- the need to provide higher education students with access to the Internet and a personal computer;
- determining the copyright of educational materials during distance learning, to constantly update the educational process;
- the high labor intensity of interactive multimedia interaction, development of high-quality educational materials, preparation of different level tests;
- calculation of the methodical load of the teacher.

Let's analyze the positions of the dynamics of the development of distance learning that depend on:

- from the possibilities of the higher education system to create an effective mechanism for the provision of professional knowledge and its relaying, to offer competitive services in the educational sector with the help of information and communication technologies;
- from the individual ability of students of higher education to use the opportunities of distance learning to obtain professional knowledge, for self-development and continuous disclosure of individual capabilities, as well as the ability to self-educate, and for the readiness of employers to recognize the equivalence of acquired abilities, skills, knowledge, to those competencies that can be formed when using traditional forms of education (Nalivayko & Martsenyuk, 2020).

Let's consider the stages of the introduction of distance learning in institutions of higher education:

- creation of a unit responsible for the implementation of distance learning for obtaining professional knowledge;
- solving technical issues for self-development and continuous disclosure of individual capabilities, as well as the ability to self-educate (creation of a creative group on the implementation of distance learning, network configuration, selection of a software platform, installation of hardware);
- creation of a regulatory framework for distance learning for obtaining professional knowledge;
- determination of priority areas for the use of distance learning technologies for obtaining professional knowledge, specialization of student training, specialties, etc.;
- conducting training and seminars to train teachers to use distance learning technologies to obtain professional knowledge;
- training of specialists responsible for the creation and operation of distance learning courses;
- with the help of a specialized commission to recognize an information resource for obtaining professional knowledge through a distance learning course;
- determination of calculation technology according to defined criteria for the created distance learning course between the university and the developer;
- monitoring of the distance learning course in the educational process of the institution of higher education;
- professional use of distance learning technologies to obtain professional knowledge in external and correspondence forms;
- creation of a database of distance learning courses for obtaining professional knowledge (Bodnenko, 2008).

The main requirement for distance learning at present is to ensure its effectiveness. The phenomenon of communication, an integral component of any educational process, has become decisive for distance education. The effectiveness of the educational process to obtain professional knowledge depends on the level of implementation of communication during distance learning (Kuzminskyi et al., 2018).

The quality of distance education for obtaining professional knowledge is influenced by the principles of its organization:

- the professionalism of contact between teachers and students (the influence of the frequency of contact between students of education is an important factor in cognitive student motivation. With this approach, working in small groups is of great importance for active cooperation and for obtaining professional knowledge in the educational process, which in distance learning to obtain professional knowledge activates the components of determining a person's status in society. Modern communications during distance learning facilitate the access of educational space seekers to the teacher, leading to joint efforts in solving problems that arise in the process of professional training. Here, great importance is attached to asynchronous communication, which allows you to organize an effective conversation during distance learning and contributes to the acquisition of professional knowledge);
- quick feedback on distance learning to obtain professional knowledge (when studying the material, students of higher education need a variety of help – this is the analysis and discussion of the material, consultations, assessment, and monitoring of knowledge, help with homework, connection with progressive experience. Applicants for educational space should feel that they need to learn what they already know and how to monitor their knowledge);
- the development of cooperation between students in distance learning (the educational process in a team is more effective than independent learning. Quality learning is equated to an effective, kind, pleasant learning atmosphere and the collective work of students and teachers, which has social significance. Collective educational actions of students in distance learning increase enthusiasm and motivation and are important for gaining professional knowledge Sharing ideas deepens understanding and improves reasoning);
- effective use of time during distance learning (successful allocation of time for obtaining professional knowledge is a guarantee for students of effective learning, effective study, and improvement of skills for teachers) (Bondarenko & Kukharenko, 2013).

In the distance learning system, to successfully organize the teacher's communicative interaction with students, the teacher must have the following skills:

- use forms of communication: non-verbal and verbal;
- establish contact with the audience online and hold a virtual discussion;
- to facilitate the establishment of interpersonal interaction and the expression of one's opinion during the discussion;
- use ICT tools optimally to implement communicative interaction during distance learning;
- correctly choose correspondence to the goal of teaching tactics, and communication strategy;
- conduct distance learning classes taking into account the psychological characteristics of students' behavior to obtain professional knowledge in a virtual environment;
- during distance learning, find an individual approach to students;
- to create a positive emotional background between distance learning subjects;
- to contribute to the elimination of barriers in the indirect communication of education seekers, to apply mechanisms for diagnosing communicative conflicts.

Therefore, distance learning for obtaining professional knowledge requires special training from the teacher to implement high-quality and professional-pedagogical communication (Ryazantseva, 2016).

One of the options for organizing distance learning for obtaining high-quality professional knowledge is the distance learning system "KSU Online", which is created based on the Moodle information environment (Kuchai et al., 2021).

Moodle (modular object-oriented dynamic learning environment – an acronym for Modular Object-Oriented Dynamic Learning Environment) is an educational platform that unites administrators, students of education, and teachers in a single system of integrated personalized educational environments. Moodle is adapted for online learning and is such an educational platform that has great didactic capabilities for creating innovative educational tools (Shchyrbul et al., 2022).

The "KSU Online" system for distance learning allows for the acquisition of professional knowledge to provide structured educational and methodological complexes of disciplines, to intensify the educational process to ensure effective independent work of students, to improve the quality of monitoring the educational activities of future specialists, to form a high level of professional IT competence in them.

The "KSU Online" distance learning system allows you to develop a course from the following modules: Forum and Chat, Lecture, Seminar, HotPot, Questionnaire, Questionnaire, External application, Wiki, Assignment, Glossary, Survey, and Test (Plakhotnik et al., 2022).

Each of the proposed modules has the possibility of feedback. For example, the "HotPot" module allows you to implement and conduct reports on student responses and their evaluation and provides access to professional information for both sides of the educational process. The "Questionnaire" and "Questionnaire" modules collect data from users on the effectiveness of monitoring learning in distance courses to evaluate and stimulate the learning of the distance courses themselves. The purpose of these modules is to help the teacher learn the abilities of the students in the educational space, find out the effectiveness of education from the point of view of students, get to know their students, and offer them quality and interesting education. The modules "Database", "Wiki" and "Glossary" are interesting. Considering them from the point of view of the organization of common types of activities of education seekers, we note that in addition to their main functions, all records of education seekers during distance learning can be evaluated not only by the teacher but also by other students to obtain professional knowledge. With the help of the "Survey" module, the teacher can quickly and qualitatively find out the wishes of the students regarding the direction of the course or the choice of topic, and check the assimilation of certain educational material. The educational element "Tasks" in distance learning allows the teacher to give tasks for obtaining professional knowledge, collect student works, monitor them, and leave suggestions and feedback in the form of comments, a separate file where the answer of the student of education or audio feedback will be corrected. To evaluate the answer, the teacher offers several methods. Teachers offer an active element "Workbook", which allows giving feedback on the work of students on a specific topic. Providing feedback offers an element of the "Lecture" course that allows the teacher to facilitate understanding and learning of the lecture material. After passing the study page, the student should take a test control. Depending on the monitoring results, students can return to the previous page or go to another page. Modules such as "Seminar", "Test", and SCORM packages can be used for the quality assessment of education seekers and their knowledge monitoring. The "Seminar" module provides an opportunity for mutual evaluation of students' works. In this case, students receive grades for their work and their assessment of fellow students' work. Modules such as "Chat" and "Forum" provide training participants with the opportunity to communicate in asynchronous and synchronous modes.

The significance of the "KSU Online" system is that it stores the created portfolio of each student of the educational space: all evaluations and comments on works, all messages in the forum, and all submitted works. The distance learning teacher can track any activity of the learner on the site (duration and number of visits to each training course over a certain period). Therefore, the use of distance learning to obtain professional knowledge, the use of innovative technologies, and various educational platforms can provide interactive interaction between the teacher and the learner at various stages of education. The elements and

resources of the LMS Moodle in the distance learning system "KSU Online" contribute to the creation of such an environment of educational space that ensures dialogue between the teacher and the student, establishes and stimulates feedback, provides constant support throughout the course of study by the teacher (Ilyina, 2020).

5. Conclusions

The significance of distance learning of higher education seekers as a component of the educational process in a vocational education institution is shown. Distance education is the most effective system of training and continuous self-education of highly qualified specialists in various industries and spheres. In the preparation of specialists, distance learning is presented as a mechanism for the transformation of educational activity into educational and professional activity, as a type and component of educational activity, as the organization of a high-quality educational process "at a distance" with open access to educational resources and the use of the latest information and communication means of education.

Forms of distance learning (correspondence, telecommunication) are considered.

Characteristic features of distance learning are singled out; the positive characteristics of distance learning are grouped and the negative characteristics of online education are emphasized. The stages of the introduction of distance learning in institutions of higher education are considered, and the positions of the dynamics of the development of distance learning are shown.

The principles of distance learning organization are disclosed in the article. The skills that a teacher should possess in the remote work system to successfully organize communicative interaction with students are analyzed.

Further research will be aimed at substantiating the possibilities of an individual approach to education seekers during distance learning.

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Prospects for the use of artificial intelligence in jurisprudence: from the educational process to legal practice. The experience of China

Perspectivas del uso de la inteligencia artificial en la jurisprudencia: del proceso educativo a la práctica jurídica. La experiencia de China

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Abstract

Information technologies are gradually becoming an indispensable attribute of all spheres of human existence. Jurisprudence is no exception. We are on the way to the introduction of modern innovative technologies in all fields of jurisprudence. The main direction of such activity is the introduction of artificial intelligence technology even at the stage of obtaining legal education. The purpose of the work is to study the peculiarities of the involvement of artificial intelligence in the field of jurisprudence, starting from the stage of obtaining legal education and up to their professional activities, in particular, the administration of justice on the example of the PRC. The object of the study is the legal acts and judicial practice of the PRC, as well as other foreign countries, in the field of involving AI into the legal process. The subject of the study is social relations related to the involvement of artificial intelligence in the field of jurisprudence. Research methodology includes: comparative legal, analysis, synthesis and formal legal method. The authors of the



article sum up that AI significantly simplifies and improves the quality of legal activity, including the educational process, as it allows to collect and analyze quickly great amount of legal content.

Keywords: jurisprudence, educational process, artificial intelligence, judiciary, innovative technologies.

Resumen

Las tecnologías de la información se están convirtiendo gradualmente en un atributo indispensable de todas las esferas de la existencia humana. La jurisprudencia no es una excepción. Estamos en el camino de la introducción de modernas tecnologías innovadoras en todos los campos de la jurisprudencia. La dirección principal de dicha actividad es la introducción de tecnología de inteligencia artificial incluso en la etapa de obtención de educación legal. El objetivo del trabajo es estudiar las peculiaridades de la participación de la inteligencia artificial en el campo de la jurisprudencia, desde la etapa de obtención de la educación jurídica y hasta sus actividades profesionales, en particular, la administración de justicia en el ejemplo de la República Popular China. El objeto del estudio son los actos jurídicos y la práctica judicial de la República Popular China, así como de otros países extranjeros, en el campo de la participación de la IA en el proceso legal. El tema de estudio son las relaciones sociales relacionadas con la implicación de la inteligencia artificial en el campo de la jurisprudencia. La metodología de investigación incluye: derecho comparado, análisis, síntesis y método jurídico formal. Los autores del artículo resumen que la IA simplifica y mejora significativamente la calidad de la actividad legal, incluido el proceso educativo, ya que permite recopilar y analizar rápidamente una gran cantidad de contenido legal.

Palabras clave: jurisprudencia, proceso educativo, inteligencia artificial, poder judicial, tecnologías innovadoras.

1. Introduction

Despite the brutal war that the Russian Federation launched against Ukraine on February 24, 2022, our country currently remains one of the most advanced in the world in terms of the use of information technologies in the field of public administration and official document circulation. It was Ukraine that was one of the first countries in the world to equalize the legal force of a paper document and a document that exists in electronic form. The relevant norms are contained in the laws of Ukraine "On electronic documents and electronic document management" (Law 851-IV/1996, 1996) and "On electronic trust services" (Law 2155-VIII/2017, 2017). In addition, our country was one of the first in the world to create a central executive body that is responsible for the formation and implementation of state policy in the field of digitization, digital economy, digital innovations, e-government, and e-democracy and the development of the information society. Such a body of central executive power is the Ministry of Digital Transformation of Ukraine. In accordance with the Regulation on the Ministry of Digital Transformation, approved by Resolution No. 856 of the Cabinet of Ministers of Ukraine dated September 18, 2019 (Resolution 856/2019, 2019), the functions of the Ministry are: formation and implementation of state policy in the field of development of digital skills and digital rights of citizens; formation and implementation of state policy in the field of open data, development of national electronic information resources and interoperability, development of the infrastructure of broadband access to the Internet and telecommunications, e-commerce and business; formation and implementation of state policy in the field of providing electronic and administrative services; formation and implementation of state policy in the field of electronic trust services; formation and implementation of state policy in the field of IT industry development; performing the functions of the central certifying body by ensuring the creation of conditions for the functioning of subjects of legal relations in the field of electronic trust services.

In addition to the above laws, digital innovations in the legal sphere were introduced in such documents as Law of Ukraine "On Electronic Commerce" (Law 675-VIII/2015, 2015), Law of Ukraine "On Public

Electronic Procurement" (Law 922-VIII/2015, 2015), Law of Ukraine "On Administrative Services" (Law 5203-VI/2012, 2012), Law of Ukraine "On Access to Public Information" (Law 2939-VI/2011, 2011), Law of Ukraine "On the protection of information in information and telecommunication systems" (Law 80/94-BP/1994, 1994), Law of Ukraine "On electronic communication" (Law 1089-IX/2020, 2020).

However, despite the state's understanding of the importance of digitalization, the possibilities of AI in the domestic judiciary are still almost not used. At the same time, in several Western countries, in particular, in the USA, AI already performs extremely important functions in the administration of justice. However, the most advanced country in the world in terms of the use of AI in the field of justice is, by right, China. Accordingly, it is extremely important to analyze the existing experience of China in the use of AI in the judiciary to adapt the relevant innovations in domestic realities.

2. Methodology

To prepare this study, such methods as comparative legal, analysis, synthesis, formal legal, and hermeneutic methods were used.

The comparative legal method helped to analyze the legislation of the People's Republic of China in terms of the implementation of provisions regulating the specifics of the use of AI in court proceedings in comparison with domestic legislation. This made it possible to determine the main areas of improvement of Ukrainian legislation in terms of the introduction of AI in general, and the implementation of AI in the jurisprudence, in particular.

The methods of analysis and synthesis made it possible to investigate the issue of introducing artificial intelligence into the activities of universities, courts and other institutions in China, taking into account certain aspects of such activities. Thus, the researchers were able to predict which aspects of such activities primarily need improvement in Ukraine.

The formal and legal method allowed researchers to follow the importance of a comprehensive approach to reforming the country's public life in the aspect of introducing innovative technologies in general, and artificial intelligence, in particular. As a result, a conclusion was made about the effectiveness of the functioning of AI in the field of the judiciary of the People's Republic of China, as part of the general process of informatization of the country, defined at the legislative level.

3. Literature review

Some domestic and foreign scientists studied the peculiarities of the introduction of artificial intelligence in the field of justice.

Among domestic researchers, the works of N. Shyshka and, in particular, her article "Artificial intelligence in the Ukrainian justice: legal prerequisites of implementation" (2021) arouse scientific interest. The scientist concludes that the legislation of Ukraine needs clarity and certainty following world and European standards regarding the use of artificial intelligence. Also, with the aim of proper legal regulation of security legal relations, there is a need to develop and consolidate the use of artificial intelligence at the legislative level. This will primarily contribute to legal guarantees of the safe and legal functioning of artificial intelligence systems.

Among foreign researchers of artificial intelligence in Chinese justice, our attention is primarily drawn to Chinese authors.

Youchun Yu (2023) у своїй статті Discussion on the Reform of Higher Legal Education in China Based on the Application and Limitation of Artificial Intelligence in Law Represented by ChatGPT проаналізував the challenges and opportunities facing Chinese legal education in the era of artificial intelligence, focusing on the applications and limitations of generative AI such as ChatGPT in the legal profession.

Mimi Zou (2020) in her article "Smart courts" in China and the future of personal injury litigation provides an overview of how Chinese courts have swiftly embraced the adoption of new technologies under this framework over the past few years. The author claims, that Chinese courts are adopting and experimenting with deep technologies at a much faster pace and on a greater scale than their counterparts in most other countries. In recent years, Chinese courts have seen major developments in online dispute resolution platforms, specialized Internet courts, and the wide use of AI tools across case management, dispute resolution, and adjudication processes in personal injury claims. Other novel technologies such as distributed ledgers, blockchain, and smart contracts solutions are currently being developed and rolled out in several local and specialized courts. The Chinese leadership has established a policy framework of "Smart Courts" to enhance judicial efficiency, transparency, and effectiveness. This article, with consideration of how Smart Courts may handle personal injury claims.

Chen Mingsung and Li Shuling (2020) in their article «Research on the application of artificial intelligence technology in the field of Justice» claims that China's courts at all levels are promoting the construction of "intelligent courts", which is an important part of the national network power strategy, as well as the embodiment of E-government in the judicial field. Through artificial intelligence technology, judicial procedures such as service, signature, evidence, trial, debate, record, and judgment in the process of litigation are managed and controlled in a unified way. However, there are many problems to be overcome in the application of artificial intelligence technology in the judicial field. Therefore, it is the foundation of long-term and steady development to find out the problems in time and propose solutions.

Yadong Cui (2020) in the book «Artificial Intelligence and Judicial Modernization» offers a Chinese perspective on the use of artificial intelligence in the judicial field. The author introduces the research and development process and value of the Shanghai criminal case intelligent assistance system.

4. Research Results

The use of artificial intelligence in jurisprudence in Ukraine is at an initial stage, although on December 2, 2020, the Cabinet of Ministers of Ukraine approved the Concept of the Development of Artificial Intelligence in Ukraine, which provides for the use of artificial intelligence technologies in the field of jurisprudence and the administration of justice. At the same time, some countries of the world are already involving artificial intelligence at all stages of the legal process, including the stage of training specialists. First of all, we are talking about the USA and China.

Artificial intelligence (AI) can be described as "allowing a machine to behave in such a way that it would be called intelligent if a human being behaved in such a way". This is the definition that John McCarthy, considered to have invented the term "Artificial intelligence", gave to AI in 1956 (Kaplan, 2016).

Artificial intelligence technology has been actively used in law enforcement in the United States since 2017. It was then that the New York City Criminal Justice Agency began an experiment in which artificial intelligence soon began to "give advice" to judges on whether to choose a preventive measure for a criminal suspect: release on bail or detention. In particular, to create the appropriate algorithm, artificial intelligence "studied" the data of more than 1.5 million criminal cases for the years 2009-2015. The immediate subject of the study was information about the people under investigation: their age, gender, place of residence, ethnicity, as well as the crimes they were suspected of committing. Facts that could indicate whether the suspect is prone to escape were also investigated. In particular, if a person voluntarily provided the police

with data on their phone number and residential address, more often they appeared in court on their own. The result is a system that should help judges choose a preventive measure and reduce the number of cases of bias depending on the race and ethnicity of suspects (Ramey, 2020).

It is worth noting that the need to use artificial intelligence in judicial proceedings is actualized depending on the category of the case and the specific situation. In particular, A.D. (Dory) Reiling (2020) points out exactly how AI can help in court:

1. To organize information. AI is used to search for certain patterns in the texts of court documents. A clear example of the use of this function is the introduction of the eDiscovery program in the United States. E-discovery is a form of digital investigation that attempts to find evidence in email, business communications, and other data that could be used in litigation or criminal proceedings. The traditional discovery process is standard during litigation, but e-discovery is specific to digital evidence. The evidence from electronic discovery could include data from email accounts, instant messages, social profiles, online documents, databases, internal applications, digital images, website content, and any other electronic information that could be used during civil and criminal litigation (ProofPoint, 2022).
2. To find the optimal solution in case of a dispute. AI can advise you to choose the best course of action to avoid going to court. Based on the provided advice, the user independently decides on further behavior in the relevant situation. If it is impossible to avoid court proceedings, AI can advise potential participants in the process of a specific decision that will only require formal approval by the court. A proven practical example of this function is in use at the Civil Resolution Tribunal (CRT) in British Columbia, Canada. The Civil Resolution Tribunal (CRT) is Canada's first online tribunal for resolving strata and other types of disputes including small claims disputes up to \$5,000 (British Columbia, 2022). The CRT provides the public with access to interactive information pathways, tools, and a variety of dispute resolution methods including negotiation, facilitation, and, if necessary, adjudication. Participants use all of these ODR services from a computer or mobile device at a time that is convenient for them. For those who are unable or unwilling to use technology to resolve their dispute, the tribunal provides paper-based or telephone-based services (Salter, 2017).
3. To predict the results of the court process. The most extensively described application claims to be able to predict decisions of the European Court of Human Rights (ECHR). This tool uses natural language processing and machine learning to predict whether or not in a particular situation the Court will rule whether a particular provision of the European Convention on Human Rights (ECHR) has been violated. The tool works with information from earlier judgments. This AI claims 79% accuracy (Reiling, 2020).

However, the above areas are only the beginning of the era of the application of artificial intelligence in jurisprudence. Recognizing the importance of artificial intelligence and the expected benefits of its use to improve the quality of justice, the European Commission for the Efficiency of Justice (CEPEJ), which is part of the Council of Europe, 2018 adopted the "European Ethical Charter on the Use of Artificial Intelligence in Judicial Systems and Surrounding Realities" (European Commission for The Efficiency of Justice, 2018) containing five fundamental principles of using AI:

1. Principle of respect for fundamental rights: ensure that the design and implementation of artificial intelligence tools and services are compatible with fundamental rights;
2. Principle of non-discrimination: specifically prevent the development or intensification of any discrimination between individuals or groups of individuals;
3. Principle of quality and security: with regard to the processing of judicial decisions and data, use certified sources and intangible data with models elaborated in a multi-disciplinary manner, in a secure technological environment;
4. Principle of transparency, impartiality, and fairness: make data processing methods accessible and understandable, authorize external audits;

5. Principle "under user control": preclude a prescriptive approach and ensure that users are informed actors and in control of the choices made.

Therefore, the Charter provided that no one can replace a judge. We believe that, in this way, the Council of Europe has limited the possibilities of applying AI in the justice system, and over time this approach should be changed.

Thus, neither in Europe nor in the US are AI capabilities being used to their full potential, although there are some gains in this area. Instead, China is the country that uses the potential of AI to a much greater extent.

In July 2017, China's State Council released the country's strategy for developing artificial intelligence (AI), entitled 'New Generation Artificial Intelligence Development Plan. This strategy outlined China's aims to become the world leader in AI by 2030, monetize AI into a trillion-yuan (150 billion dollars) industry, and emerge as the driving force in defining ethical norms and standards for AI.

The Plan clearly stated the need to "establish a number of global leading AI technology innovation and talent training bases, and build a more complete AI legal system, ethical norms, and policy system." For the first time, the supporting legal system for the development of AI was clarified at the institutional level, which has urgently pushed for fundamental changes in the development concept, training objectives, and learning methods of legal education in the AI era. In order to promote the smooth progress of this transformation, the reform of legal education was initiated.

According to Youchun Yu, the supply-side reform of legal education should be realized from the following aspects:

1. Training Objectives: Cultivating Legal Technology Talents with "Artificial Intelligence + Law" as the Basis;
2. Educational Philosophy: Cultivate Legal Thinking and Strengthen Legal Skills Training;
3. Teaching Method: Reshaping the Role of Teachers and Pay Attention to Personalized Learning;
4. Ethical Education: Cultivating AI Ethics for Legal Professionals.

As for the sphere of justice in China, the active use of innovative technologies in the judiciary began in 2013 when the digital platform "China Judgments Online" was launched. Almost all Chinese court documents are published on this site. As of 2020, the specified resource contained 81.5 million court documents (Zou, 2020).

In 2015, reform of the judicial system began in China. Accordingly, the process of introducing innovations in the judiciary, in particular, the use of AI, accelerated, because one of the goals of the judicial reform was to simplify and speed up court procedures. Another important goal of the reform was to de-clutter Chinese judges (for example, only in the first half of 2019, there were 14.89 million cases pending in Chinese courts) (Xinhuanet, 2019).

In the report on the use of AI in the judicial system of the PRC in 2022, it is noted that it reduced the workload of judges by more than a third, and also saved the Chinese 1.7 billion working hours between 2019 and 2021. At the same time, the associated expenses decreased by 45 billion dollars, which is approximately 50% of the total amount of attorneys' fees in the country in 2021 (Law & Business, 2022).

So, back in 2015, the concept of "smart courts" was introduced in China, which provides for the use of various innovative technologies for the organization of judicial proceedings. Currently, all courts in China are connected to a centralized platform for big data management and maintenance. Information on court

cases is collected in it in real-time. The platform is automatically updated every five minutes through an information processing system distributed throughout the country. The quality of the data and the mechanism of their verification are strictly controlled. Therefore, local courts or regional authorities cannot manipulate their judicial statistics, which are submitted to a centralized national platform. The centralized platform also collects, stores, and manages data about judges and court officials, court cases, and court administration at all levels.

At the moment, artificial intelligence performs three functions in Chinese courts. It helps judges to make decisions, provides legal information to the parties to the process, and also improves the quality of services for all participants in the proceedings.

By 2022, artificial intelligence had assisted Chinese judges in handling simple cases, such as disputes over low-cost contracts. At the same time, from July 2022, AI participates in the decision-making process by judges in most court cases. Artificial intelligence also helps to eliminate gaps in forensics. A judge can provide the system with information on the case he is conducting. The robot will prepare an analysis of decisions based on those made in comparable cases and provide the judge with a certificate. In some courts, such a system can even analyze draft court decisions. To do this, it compares the evidence in the current case with the evidence from previous court decisions.

Artificial intelligence in Chinese courts provides parties with legal information. For example, the Internet court of Beijing even developed a hologram that looks like a person. It tells the parties to the dispute basic information about the general laws, rules, court system, and procedures. The hologram can clarify whether the case is under the jurisdiction of this court and whether pre-trial dispute resolution methods are available to the parties. But the system has limitations - bots are currently programmed to answer a maximum of 140 questions. Local courts in nine regions, including Beijing, Shanghai, and Guangdong, have also launched new robots based on artificial intelligence in their courtrooms. Robots help to get all the necessary information about processes. There are also more advanced applications with artificial intelligence. These are robots that can estimate the potential results of dispute resolution (Zou, 2020).

Courts in China on the recommendation of the Supreme People's Court create universal service centers. These centers consist of various integrated mechanisms that help the parties navigate the court process more easily. Several courts have also created AI Services terminals. With their help, process participants can scan and send files. Terminals can also draw up procedural documents for the parties, and identify relevant laws, cases, and legal documents. In many courts, a system of object recognition is implemented. The system can accept verbal commands to display the relevant information on the screen. In addition, the technology can decode speech while listening and identify speakers. It can distinguish the voices of judges, plaintiffs, defendants, and other participants in the court process. All this makes it possible to make a transcript of the meeting automatically during the hearing. In essence, this is a text-based online broadcast.

Three specialized Internet courts have become the most advanced in the system of "smart courts" in China. They were created to resolve fast-growing online disputes in minimal time and money. The first internet court was created in Hangzhou in August 2017. A year later, such courts appeared in Beijing and Guangzhou. Specialized courts consider cases that are connected with the Internet and arise from disputes about the violation of personal and property rights, and responsibility for the quality of goods and from online stores. Internet courts are the first courts in China, where the entire process takes place online, including registration and service of documents, collection, and presentation of evidence, conducting a trial, issuing a court decision, execution, appeal, and other processes. Internet courts have integrated mechanisms and network solutions for building a multi-level, diversified online dispute resolution system. Such a system includes pre-trial mediation before the start of the process. The online meeting takes place via video conference. Any part of the trial can be conducted offline at the request of the parties or following

the needs of the trial itself. The platform of court proceedings "mobile court" is popular. The application can be downloaded to WeChat, the most popular mobile communication system for sending text and voice messages in China. The parties are authenticated through the facial recognition system. Users can file a lawsuit directly through the application, and during the hearing, the parties have access to the judge: they can write to him, send a video message, and upload evidence. The plaintiff, the defendant, and the judge can simultaneously enter the application, conduct pre-trial mediation, complete the electronic signature of the mediation agreement (if successful) and send the agreement also in the application. Mobile courts are not the only innovation in the Chinese judicial system. Chinese courts also actively support blockchain. Internet courts use it as a means of storing evidence and authentication. This is especially useful for online evidence in disputes that is created and stored online. The Supreme People's Court stated that digital data stored and identified using blockchain are considered evidence in disputes. The Hangzhou Internet Court is also conducting a pilot project. It is about using smart contracts for automatic initiation of cases and storage of digital assets in the judicial blockchain database.

In July 2022, the Beijing Supreme Court significantly increased the role of AI in China's judiciary. In particular, judges must now consult with the AI in each case. If they do not agree with its recommendation, they must provide a written explanation of the reasons. And although it seems that China's decision to involve AI to solve all court cases looks revolutionary to the rest of the world, the drastic increase in the role of AI in the judiciary, up to the complete replacement of natural person judges, is inevitable.

5. Conclusions

1. The introduction of modern innovative technologies in the field of jurisprudence is the need of today. Those countries that are at the forefront of this process will be able to achieve or are already achieving revolutionary results in the context of the quality of legal education and law enforcement and the convenience of all related services.
2. To date, China is the only country in the world that most actively introduces modern information technologies, the basic of which is AI technology, in the field of jurisprudence. It is noteworthy that China is consistently implementing a program of comprehensive use of AI in all possible spheres of life, and jurisprudence is only one of the areas of such use.
3. The example of China is useful for Ukraine and for most other countries of the world, because it becomes possible to investigate a whole series of problematic issues of the use of AI in jurisprudence not only at the theoretical, but much more importantly - at the empirical level. In other words, we can directly adapt China's AI experience to Ukrainian realities. Moreover, as practice shows, domestic government structures quite adequately understand the importance of digitization of many aspects of the state's socio-economic activity.

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Adaptation of internally displaced students to new learning environment through innovative methods of open teacher training in war perspectives

Adaptación de estudiantes desplazados internamente a nuevos entornos de aprendizaje mediante métodos innovadores de formación docente abierta en perspectivas de guerra


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Abstract

The article investigates the impact of innovative open learning technologies on training future teachers, particularly those internally displaced in Ukraine due to the war with Russia. It explores the current conditions of these students and how to meet their educational needs through online learning. The successful adaptation of displaced students relies on government's social, legal, and academic support, highlighting the importance of online learning in war response. The methodology involved surveying 437 displaced students from Ukrainian higher education institutions, using various questionnaires. Data on inputs, outputs, and outcomes of online learning programs were collected and analyzed. Both benefits (continuous access to learning, flexibility, low economic cost, access to international programs) and risks (lack of socialization, insufficient technical support, resource imbalance) were assessed. The findings indicate that adaptation challenges are mainly linked to poor living conditions, stress, and changes in learning conditions and curriculum. The study concludes that open learning technologies facilitate the adaptation of displaced students, ensuring educational continuity and adherence to international standards.

Keywords: digital tools, education policy, higher education, socialization, teacher training.

Resumen

El artículo examina el impacto de tecnologías innovadoras de aprendizaje abierto en la formación de futuros docentes, especialmente estudiantes desplazados internamente en Ucrania debido a la guerra con Rusia.

Se investigaron las condiciones actuales de estos estudiantes y cómo satisfacer sus necesidades educativas a través del aprendizaje en línea. La adaptación exitosa de los estudiantes desplazados depende del apoyo social, legal y académico del gobierno, destacando la importancia del aprendizaje en línea en respuesta a la guerra. La metodología incluyó encuestas a 437 estudiantes desplazados de instituciones de educación superior ucranianas, utilizando cuestionarios variados. Se recolectaron y analizaron datos sobre insumos, resultados y efectos de los programas de aprendizaje en línea. Los beneficios (acceso continuo al aprendizaje, flexibilidad, bajo costo económico, acceso a programas internacionales) y riesgos (falta de socialización, soporte técnico insuficiente, desequilibrio de recursos) fueron evaluados. Los resultados mostraron que las principales dificultades de adaptación se relacionan con malas condiciones de vida, estrés y cambios en las condiciones y currículo de aprendizaje. Se concluyó que las tecnologías de aprendizaje abierto facilitan la adaptación de los estudiantes desplazados, permitiendo la continuidad educativa y el cumplimiento de estándares internacionales.

Palabras clave: educación superior, herramientas digitales, política educativa, socialización, formación docente.

1. Introduction

The war in Ukraine caused the enormous damage to higher education system: massive migration of students and teaching staff, break of educational process, decrease of education quality and its transfer mainly to a distance format.

Currently, according to official report of the Ministry of Education and Science of Ukraine, 131 institutions, or 5.5% of all institutions of higher education, have been destroyed or damaged and 17 % were displaced to safer regions of Ukraine.

Therefore, a number of key issues was identified to be addressed immediately: limited access of students and educators to educational materials and learning tools; destruction of infrastructure, including educational facilities; reduce of education quality; threat to life, physical and mental health; safety of all the educational process participants (students, educators, parents); displacement to safe regions of Ukraine; break in the educational process (Ministry of Education and Science of Ukraine, 2022).

In this context, there is a crucial necessity to study the process of internally displaced students' adaptation and the approaches provided by Ukrainian teacher training universities to support academic activity of the above-mentioned students' cohort.

The research is aimed to study potential risks that internally displaced students faced and actual benefits gained due to the online learning.

Note that potential risks and possible ways of overcoming them are highlighted in recent official documents at the national and international levels, issued by such organizations as the Ministry of Social Policy of Ukraine, the Ministry of Science and Education of Ukraine, Internal Displacement Monitoring Centre (IDMC), Office of the United Nations High Commissioner for Refugees (UNHCR), International Organization for Migration (IOM), United Nations Educational, Scientific and Cultural Organization (UNESCO), etc.

It was found that considerable attention is focused on the issue of complex adaptation of internally displaced students (IDSs) to new conditions, such as socio-economic, psychological and academic.

Most scientists consider socio-economic factor to be the most essential one within successful adaptation that reveals the living conditions of students and their families, the availability of a workplace for classes, financial support of their families (Bilotserkovets et al., 2021).

Based on the Government's resolution, internally displaced students are provided with monthly-targeted assistance to cover their living expenses, including rent and utilities. Additionally, they are ensured by humanitarian aid, such as food kits, clothes, shoes and personal hygiene products provided by the local communities' centers (Report of the Commissioner for Human Rights of the Verkhovna Rada of Ukraine, 2022).

The procedure of obtaining temporary housing is regulated by the Resolution of the Cabinet of Ministers of Ukraine. It emphasizes that internally displaced persons (IDPs) can be provided with existing houses and dormitories reconstructed at the expense of the government or with the monetary compensation that is provided to the owners of apartments who ensured shelters to these persons. However, there is the urgent need in developing conceptual state programs aimed at meeting the housing needs of IDPs, especially whose houses were completely destroyed, by means of lending or compensation for the cost of lost housing (Decree of Cabinet of ministers of Ukraine No. 495, 2022).

According to the Resolution of the Ministry of Reintegration of the Temporarily Occupied Territories of Ukraine, government targeted support is provided to students of higher education institutions or vocational education and training institutions in the form of financial support of their studies (preferably long-term loans), free or subsidized accommodation in student dormitories, free access to the Internet, social scholarships, etc. (Ministry of Reintegration of the Temporarily Occupied Territories of Ukraine, 2022).

Another important issue to consider is the problem of psychological adaptation. In most cases it is caused by the feeling of insecurity and helplessness, fear of changes (new friends, new learning environment, new living conditions), guilt, alienation and isolation from local peers, break in studies that brings to psychosomatic disorders and lack of motivation to study (Trubavina, 2015).

Government authorities together with public organizations have identified a number of steps aimed at overcoming the problem of psychological risks of IDS.

Thus, the Ministry of Education and Science of Ukraine has developed a document "On providing psychological support for participants of educational process in the conditions of martial law in Ukraine". It obliged education institutions to create ICT based conditions to provide medical, psychological, and pedagogical rehabilitation of the educational process participants in the form of online consultancy "Cabinet of a psychologist or social educator" (based on the websites of education institutions) or provide information support about the available sources of consultancy (Facebook messenger page, Telegram channel chat, etc.).

The "Ukrainian Foundation of Public Health" together with the international organization "Health Right International" developed a guide of defined algorithm of actions for the public and non-public sector specialists (social workers, psychologists, teachers and volunteers) on providing psychosocial assistance to IDSs.

The problem of academic adaptation deserves special attention, in particular, the following issues such as academic mobility of students, teaching staff, higher education institutions; development of new curricula; adaptation to a new educational environment; language adaptation; studying during air alarms; offline training; lack or unstable Internet connection; lack of appropriate mobile devices; failure of online platforms of education institutions; digitalization processes issues such as inability to keep or create electronic curricula, electronic registers (mostly of relocated universities) (Bilotserkovets & Hubina, 2019).

Thus, the program document "In the Face of War, a Year of Action in Ukraine" emphasizes on significant financial support of international organizations, in particular, UNESCO. On the initiative of UNESCO and its 25 partners such as the Global Education Coalition, including Coursera, EdX, Khan Academy and Amazon Web Service 650 education institutions were provided with electronic devices and introduction of modern online platforms into Ukrainian educational process (UNESCO, 2023)

The Ministry of Digital Transformation launched the "Wi-Fi in shelters" project. Due to this project 2 thousand education institutions were connected to the Internet in shelters.

Another project "Open online platform United Ukrainian University (UUU)" launched by the Ministry of Education and Science of Ukraine, Coursera and edX companies provided free access to their "Online University" catalogs for all Ukrainian universities (Ministry of Education and Science of Ukraine, 2023).

Depending on the territorial location of the educational establishments (non-controlled/liberated territories), the educational process was resumed at different rates. Thus, most of students did not manage to complete the curriculum on time. Therefore, the Ministry of Education and Science of Ukraine facilitates the reorganization of the educational process by: adjustment of educational programs; an adaptation of a significant number of courses; a change in their content, evaluation criteria; a reduction of task volumes; an extension of the deadlines for material submissions. In most territories, the educational process was provided online in synchronous or asynchronous mode. In safe areas a small percentage of higher education institutions provided offline learning that also caused certain difficulties, for instance, language issue. The reason is that the North of Ukraine is mostly inhabited by Russian speaking while the West of the country by Ukrainian speaking people. Therefore, it caused certain difficulties for IDPs, such as misunderstanding while studying or communicating with home citizens (Boichenko et al., 2022).

The problem of relocation and evacuation of universities deserves considerable attention. It concerns mostly the educational establishments in the zones of active hostilities, such as Kharkiv, Chernihiv, Sumy, Donetsk (and its regions), Mykolaiv, Luhansk. The providing of learning process was based on the Law "On Amendments to Certain Laws of Ukraine Regarding State Guarantees in the Conditions of Martial Law or State of Emergency" (UKRAINE LAW, 2022). Most higher education institutions announced the admission of students with the IDPs status. They proposed teaching vacancies to evacuated (from war zones) specialists. Studying was available within the framework of academic mobility in Ukrainian universities. In addition, during the martial law universities recognized learning results (ECTS credits) obtained within the framework of formal or informal education, and, at the decision of the department the transfer of educational components to other semesters was allowed. A common practice was the work of students according to an individual plan. Additionally, students had the right to take academic leaves with the option of keeping a place in the dormitory, if necessary (Chystiakova et al., 2022).

Thus, the study of the scientific sources and official documents proved that implementation of online learning technologies enabled the covering of numerous students' problems such as socio-economic, psychological and academic. ICT facilitated successful adaptation of learners to the new living and learning conditions giving them the opportunity to continue their studies.

2. Research methodology

This study was conducted with a qualitative research approach. Thematic analysis revealed two research questions:

1. What are the main difficulties that affected adaptation of internally displaced students to new living and learning conditions?
2. How did innovative open learning technologies facilitate learning of internally displaced students?

The study involved internally displaced undergraduate and postgraduate students of Ukrainian HEIs (mainly from Sumy, Kharkiv, Chernihiv, Donetsk, Luhansk, Kherson, Mykolaiv regions). Note that some students were individually displaced to safer regions of Ukraine while their HEIs still function in the regions of destination and some students had to relocate because their HEIs were relocated. The total number of respondents was 437 people. Among the respondents there were IDSs from such relocated Universities as V.N. Karazin Kharkiv National University (Poltava), Berdiansk State Pedagogical University (Zaporizhzhia), Donetsk National University (Vinnytsia), Kherson State University (Ivano-Frankivsk), SHEI "Donbas State Pedagogical University" (Dnipro), State Institution "Luhansk Taras Shevchenko National University" (Poltava) etc.

The main method of collecting data was survey of internally displaced students by using different questionnaires (structured, unstructured (open-ended), quasi-structured (with "other variant" among alternatives), ranging the importance) to determine the main problems of their adaptation to new living and learning conditions from socio-economic, psychological, and academic perspectives. Data on the inputs, outputs and outcomes of online learning programs from both official documents and questioning participants was collected and measured.

The questionnaires were designed in Google Forms and distributed among participants through social networks, groups in Telegram, Viber, WhatsApp, sent to emails of Ukrainian higher education institutions that were relocated due to the war.

Each questionnaire contained from 10 to 15 questions. The respondents were asked to indicate the level of difficulty they had experienced with each issue, using a 10-point scale with responses ranging from 1 (no difficulty) to 10 (extreme difficulty). The major issues indicated by the internally displaced students are summarized in Table 1. The IDSs were also asked to share their views on the ways of adapting to new living and learning conditions as well as experience and outcomes of using online learning technologies.

3. Research results

The empirical findings indicated that internally displaced students had to cope with different issues while adapting to the new living and learning conditions.

Table 1.

Socio-economic, psychological and academic aspects of problems that the participants of the survey met in the process of adaptation to new living and learning conditions

Aspect	Problem	% of IDSs met
Socio-economic	<i>Bad living conditions</i>	9
	Had to share room with many people	5
	Poor Internet-connection	23
	Blackouts	37
	Lack of food	6
	Lack of money	8
Psychological	Lack of devices for e-learning	11
	Lack of motivation to study	17
	Socialization problems	12
	Emotional disorders	14
	Psychosomatic disorders	3
	Procrastination	9
	Fear, helplessness, insecurity	18
	Language problems	5

Academic	New learning environment, including virtual learning environment	23
	New educational program	7
	New academic disciplines	7
	Need to define and eliminate academic differences/transfer credits	8

The analysis of the internally displaced students' responses to the questionnaires revealed different scenarios of continuing learning for IDSs:

1. IDSs changed place of living but didn't change affiliation.
2. IDSs changed place of living and changed affiliation.
3. IDSs changed place of living because their HEI was relocated from temporarily occupied territories.

Being internally displaced, students of Ukrainian higher education institutions faced socio-economic, psychological and academic difficulties. At the very arrival to new places of living IDSs reported on bad living conditions (9 %), need to share room with 20 or more people (5 %) and lack of devices (11 %) which complicated the process of e-learning. They had complications with socialization (12 %), Ukrainian language communication (5 %); 14 % of the internally displaced students who had been interrogated, had pointed out certain kinds of emotional disorders.

Having been asked: "Do you have difficulties communicating with local residents?" 95 % of students answered that they had mainly no problems, while 5 % of respondents found it difficult to use Ukrainian language in everyday life. As one student reported:

In our university, the learning process was conducted in Ukrainian because it's a state language, however, in everyday life we mainly used Russian due to our regional specificity and close location to the border. At first, it was very difficult to use the Ukrainian language in a non-academic environment. It seemed that everyone was looking at you, and you were starting to get stressed, nervous.

Some internally displaced students reported that they had to change affiliation (27 %), in particular after getting bachelor's degree and applying for the next stage – master's degree. The most acute problem for this category of respondents (5 %) was impossibility of obtaining original documents from the previous place of study (occupation by Russian troops, destruction of campuses, etc.).

Some internally displaced students who changed affiliation and had to continue their studies within the same degree (mainly bachelor) indicated the difficulties caused by introduction of a new curriculum (7 %) or new academic disciplines (7 %). Common problems were associated with the need to define and eliminate academic differences/transfer credits. One respondent explained:

As I have understood from the syllabus of the academic discipline I have already studied it, but under slightly different title, and the number of credits does not coincide too. I would rather spend my time on learning other disciplines that I haven't studied before, but we don't have such mechanisms to transfer these credits here.

Many internally displaced students faced the problems connected with adjusting themselves to new learning environments, including virtual learning environment (23 %). Some of them revealed certain degree of stress caused by the need to quickly immerse in new virtual learning environment:

"Having used to Moodle with all its functions, it was difficult to get used to Microsoft Teams".

*"We haven't used LMS at the previous place of study and my laptop is too old to install necessary software".
"All the teaching was conducted through video conferencing, I have live communication with my university teachers and group mates, but now I have only assignments in Moodle. I miss it so much".*

Being asked about the benefits of online learning technologies, the internally displaced students pointed out:

"Due to online learning, I can stay in a safe place (my home) during the air alarms without breaking the learning process".

"It is very convenient to use email to send my course work to the teacher as you need not to look for the printing office to print it somewhere in the town that can be dangerous for my life especially during the air alarms".

"I like the idea of using messengers such as Telegram, Viber, WhatsApp because you can easily get in touch with your teacher or tutor to get some additional assistance or with your group mates, for instance, to know any information about our common friend who suddenly stopped communicating and disappeared".

According to the respondents' answers we could identify the following online learning benefits:

- opportunity to continue studies while moving to safer place of living;
- intensification of the academic mobility;
- ensuring high quality of educational services;
- gaining international experience in the academic field;
- flexibility;
- larger academic freedom, etc.

Thus, the survey determined the following rate: socio-economic sphere had caused certain problems for 37 % of the internally displaced students, 43 % of the participants had undertaken psychological challenges, 38 % of the respondents had met difficulties in the academic sphere.

3. Discussion

The socio-economic aspect of adaptation regards internally displaced students' adjustment to the new surroundings. It is determined by the need to get used to new living conditions, changes in rhythm of life, stress factors of the new social environment, change in eating habits due to lack of money/usual food, etc.

The psychological aspect of adaptation refers to the internally displaced students' need to cope with stress of losing their close people, their homes, fear, helplessness, insecurity. As a result, internally displaced students experienced low motivation to study, procrastination, emotional and psychosomatic disorders. The main factors that influenced the process of successful psychological adaptation are identified as need for continue learning activities in a new academic environment, separation from the family and the usual social surrounding, feeling of loneliness. Language adaptation became the problem for students from north-eastern regions of Ukraine, who did not use the Ukrainian language in everyday life.

While analyzing the problems of academic adaptation, special attention should be paid to new learning environments, in particular e-learning environments. Different HEIs use different LMS to organize online learning. The most frequently used are Moodle, Google Classroom and Microsoft Teams. At the same time, being relocated, the Universities had to change the platform or organize alternative way of providing educational services – using messengers (Telegram, Viber, WhatsApp, etc.), video conferencing tools

(Zoom, Google Meet, Skype, etc.), email, etc. The internally displaced students had to adjust themselves both to new technical and academic requirements. IDs who changed affiliation had to adapt to new curriculum, new rules and processes of assessment, testing and examination.

Despite some difficulties IDs experienced while adapting to new online learning platforms, online learning technologies themselves facilitated students' adaptation to new learning and living conditions. The positive impact of online learning technologies on teaching and learning internally displaced students is evidenced by international studies (Gillett-Swan, 2017; Lwin & Sungtong, 2022; Bawa & Bayaro, 2017). Though the above studies were conducted in different contexts and were not related to the war in Ukraine, we can trace the common features: accessibility, flexibility, mobility, larger academic freedom of internally displaced students, etc.

4. Conclusions

Adaptation of internally displaced students is a complex process that can be successful only in the case of creating supporting learning environment and favorable conditions for living and learning. The study revealed that most difficulties in adaptation of internally displaced students for new living and learning conditions are caused mainly by psychological problems, as well as the peculiarities of the surrounding environment, in particular – communicative. Also, the findings of the study proved that to achieve the successful adaptation of internally displaced students to learning in new academic environment, the whole range of academic and social programs should be implemented. In this context online learning technologies are a powerful tool that contributed to continuous studying process of internally displaced students, the intensification of their academic mobility, ensuring international standards for the high quality of educational services and gaining international experience in the academic field.

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Principles of the development of academic integrity and critical thinking among philology students

Principios del desarrollo de la integridad académica y el pensamiento crítico en estudiantes de filología


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Abstract

How and through what factors do academic staff influence students' development and enhancement of critical literacy and academic integrity in 1st year undergraduate philology? Critical thinking is a system of judgements of a higher order that makes it possible to analyse information in such a way that rational decisions can be made on the basis of it. Under the conditions of the necessity of university education, academic integrity is one of the cases of the implementation of critical thinking. The authors of the article have used the following main methods: interviewing and testing at the initial and control stages of the level of knowledge, skills and abilities of students, scientific observation, interviewing academic staff. Lectures



can have a significant influence on the level of students' awareness of their own need to comply with the ideals of academic integrity and on the further development of this culture in the future. This has a positive effect on the students' self-awareness as equal members of the educational process. It stimulates the development of a sense of responsibility and awareness of mastering the future profession. A working model for influencing the development and improvement of critical thinking skills and academic integrity among philology students has been developed.

Keywords: academic integrity, academic success, critical thinking skills, English language, teaching methods.

Resumen

El objetivo principal del estudio es encontrar respuestas a la pregunta: cómo y con la ayuda de qué factores el profesorado de educación superior puede influir en el desarrollo y mejora de las habilidades de pensamiento crítico y la integridad académica en estudiantes de filología durante su primer año de pregrado. El pensamiento crítico es un sistema de juicios de orden superior que le permite analizar información de tal manera que pueda tomar decisiones racionales con base en ella. La integridad académica es uno de los casos de implementación del pensamiento crítico en el contexto de la necesidad de la formación universitaria. Los autores del artículo han utilizado los siguientes métodos principales: encuesta y prueba en las etapas iniciales y de control de la formación de competencias, habilidades y capacidades de los estudiantes, observación científica, encuestas al personal académico. Las conferencias pueden afectar significativamente el nivel de conciencia entre los estudiantes sobre su propia necesidad de seguir los ideales de integridad académica y estimular el desarrollo de esta cultura en el futuro. Esto tiene un efecto positivo en la autoconciencia de los estudiantes como participantes iguales en el proceso educativo, estimula el desarrollo de la responsabilidad y la conciencia con respecto al dominio de la futura profesión. Se ha desarrollado un modelo de trabajo en cuanto a los medios de influencia en el desarrollo y mejora de las habilidades de pensamiento crítico y la integridad académica entre los estudiantes de filología.

Palabras clave: éxito académico, habilidades de pensamiento crítico, idioma inglés, integridad académica, métodos de enseñanza.

1. Introduction

The purpose of the article is to present the authors' experience as for the principles of development of academic integrity and critical thinking of the 1st year philology students of Kyiv National University of Technologies and Design (Ukraine). In the study, we combine the following two aspects – academic integrity and critical thinking – as we believe that the observance of academic integrity in education by research participants, students of philology, is one of the manifestations of critical thinking in education, i.e. the experience of good practice to achieve academic success.

Critical thinking at the present stage of science development is interpreted, firstly, as an abstract reflection of the highest order and the art of analysis; and secondly, as a purely practical goal, the achievement of which is one of the most important goals in general (especially in the conditions of free education), as each state must strive to form a trajectory of individual decisions to manage its perception of reality, and to ensure the conditions for its self-improvement (Halpern & Dunn, 2022, p. 33; Dvorianchykova & Yuhan, 2018, p. 52). Experts from the World Economic Forum in Davos and the World Innovation Summit for Education have traditionally assessed critical thinking as one of the most desirable skills in the labour market that successful people should have (WEF, 2020; WISE, 2021). In the programs of influential conferences and educational recommendations (USA, Europe) the ability to think critically is one of the main conditions of national well-being and security and is considered to be the basis for a person's fruitful professional activity, material and mental well-being (for example, the Future of Education Technology Conference

(USA), the work of the influential The Foundation for Critical Thinking, which in 2023 is preparing to hold The 43rd Annual International Conference on Critical Thinking (The Foundation for Critical Thinking, 2023). In many countries, there are standardized exams for entrants to colleges, master's or postgraduate courses (GRE, GMAT, LSAT or TSA), successful passing of a test of a certain level for the presence of developed critical thinking is a prerequisite for a candidate for a prestigious position (for example, PET or WGCTA). In addition, strict adherence to the principles of academic integrity is consistent and mandatory: most universities around the world teach critical thinking courses; a large number of educational materials are published for various professions (by types), trainings are held, etc. (courses "Logical and Critical Thinking" at the University of Auckland (Dare & Girard, 2022), "Critical Thinking for the Information Age" at the University of Michigan (Nisbett, 2022), "Critical Reasoning for Beginners" at Oxford University (Talbot, 2012), etc., as well as a well-known program "INSIGHT Development Program" from the organization, which is considered to be one of the world leaders in the sector of qualitative and quantitative measurement of critical thinking (Insight Assessment, 2023).

According to the Law on Education, Ukraine (Law of Ukraine 2145-VIII, 2017), critical and systematic thinking is proclaimed to be one of the skills common to all competencies, which is necessary for every modern person to live successfully (On Education, Article 12), and all participants in the educational process adhere to ethical principles and regulation rules of academic integrity, that is determined by the basis for ensuring confidence in learning outcomes (On Education, Article 42).

Thus, in the article we have the following research question: how teachers can influence the development and improvement of critical thinking skills and academic integrity in 1st year students of philology. According to the research question, first of all, the article will clarify the principles of introducing optimal tools from the arsenal of philological disciplines to develop critical thinking skills and adhere to the principles of academic integrity by applicants who begin their studies and complete 1st year of bachelor's degree. Secondly, the article presents an analysis of quantitative indicators on the acquisition of critical thinking skills and academic integrity by philologists at the end of the 2nd semester of the 1st year of Kyiv National University of Technologies and Design and considers the correlation between these data and general results interpretation of the questionnaire of these respondents at the beginning of the 1st semester of the 1st year and at the end of the 2nd semester of the 1st year in order to record the development of these skills.

2. Literature Review

The issue of the principles for developing the competence of critical thinking in the context of building an innovative model for teaching and educating citizens of progressive countries is in the focus of attention of scholars and educators of all levels and remains relevant. For example, the founders and speakers of The Critical Thinking Summer Institute UCLA USA (in collaboration with the University of Queensland and the IMPACT Center) (UCLA Summer Sessions, 2023), The Institute of Critical Thinking at the University of the West Indies (2023) and The Critical Thinking Institute (2023) in their numerous speeches and commentaries have repeatedly emphasized that the gradual stirrings in world education are shifting the emphasis from reproductive learning to in-depth learning the material by all participants, stimulating responsible, independent thinking of pupils and students, creating conditions for forming and improving skills of making their own judgments.

Having examined a significant amount of research explaining critical thinking and its components, we based our paper on Scriven and Paul's definition, presented at the Annual International Conference on Critical Thinking and Education Reform, summer 1987, as the most complete and concise work interpretation: "Critical thinking is the intellectually disciplined process of actively and skilfully conceptualizing, applying, analysing, synthesizing, and / or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action" (2019).

Such approach towards critical thinking was further developed by Paul-Elder to become one of the most cited in the critical thinking literature nowadays. According to the Paul & Elder Critical Thinking Framework (2020), the strategy of a good model of critical thinking combines thinking analysis with a focus on thinking structures, evaluating thinking by focusing on quality, and improving thinking by applying what one has learned.

As for academic integrity, there is a widespread understanding among the academic community, such as "academic integrity is the commitment to and demonstration of honest and moral behaviour in an academic setting" (Writing Center, 2023). According to researchers such as Bretag, "academic integrity is an interdisciplinary concept that provides the foundation for every aspect and all levels of education" and a modern "productive approach entails a focus on promoting the positive values of honesty, trust, fairness, respect, responsibility, and courage as the intrinsically motivated drivers for ethical academic practice" (2018).

We agree with those modern philological scholars who emphasize: "Because critical thinking skills cannot be dealt with in isolation, there is a need to integrate them in language skills, especially in reading" (Elmouhtarim, 2018, p. 342). Researcher Ouhiba also indicates that teaching a university literature course to those philology students who demonstrate an initial insufficient level of development of critical thinking skills can help teachers "using literature as a bridge between the teaching of the foreign language and the enhancement of learners' critical thinking abilities", at the same time the scholar notes that "it is needed to explore the efficiency of critical thinking approaches in teaching different subject areas" (2022, p. 477, 484).

The constant interest of Ukrainian scholars and teachers in courses, trainings and technologies of critical thinking and dissemination of best practices of academic integrity in the European and wider – global – space emphasizes the public and educational "demand" for such competencies and testifies to their commitment to improving education in general and higher education in particular.

In Ukraine, at the present stage, mastering the discipline "Critical Thinking" in secondary schools and institutions of higher education is just beginning. In the educational space of Ukraine there is an adaptation of works from the University of Queensland on the development of critical thinking (course "Science of Everyday Thinking", online platform "Prometheus" (Tangen, Thompson, & MacKenzie, 2017) and Ukrainian development that encourages teachers to develop, offering them personal growth ("Critical Thinking for Educators", Terno, Stepanova, & Horbachov, online platform "Prometheus" (2017), training course "Introduction to Critical Thinking" (Karachinskyi, 2016), training course "Fundamentals of Critical Thinking" (Pometun, Pylypchatyna, Sushchenko, & Diukov, 2019), adaptation of the test to determine the abilities of critical thinking Starkey (Lutsenko, 2014). Activities aimed at spreading the ideas of academic integrity are actively disseminated and gaining popularity (lectures, translations, publications SAIUP – "Project to promote academic integrity in Ukraine" with the participation of MES of Ukraine and with the support of the US Embassy; Strengthening Academic Integrity (American Councils for International Education, 2020). According to the letter of the Ministry of Education and Science №1 / 9-565, Ukraine (Ministry of Education and Science of Ukraine, 2017), structural subdivisions on the organization and control over the observance of the principles of academic integrity have been established and are functioning in the universities of Ukraine. So, as we predicted, the involvement of elements of traditional courses in critical thinking in educational practice will now have a relevant and positive impact on the development of domestic higher education and its applicants in general, in addition, help promote critical thinking for future scholars' scientific ideas (may influence further developments in the fields of political science, psychology, conflict, pedagogy, philology, etc.) and promote the introduction of innovative educational and management technologies in the practice of Ukrainian higher education to build a more developed society and scientific and technological progress (Yuhan & Dvorianchykova, 2019, p. 347).

We have chosen Paul & Elder as the approach that guided our research efforts on the principles of critical thinking development of philological students. In our opinion, the model of the structure of critical thinking presented by these scientists is of high quality and comprehensive, uses accurate and logical terminology, can be involved in any discipline, and defines specific cognitive skills, including metacognition. The last position of the above is the basis for us to justify the involvement of the development of academic integrity in the orbit of improvement by students of their own critical thinking. We believe that it is logical that the development of metacognition, traditionally understood as a person's ability to critically analyse how he thinks, understands, controls his thinking and self-regulate learning, is directly related to his tendency to adhere to academic integrity in education as the best cognitive and institutional strategy for academic success. We also agree with the ideas of Paul & Elder theorists, such as the University of Louisville scientists working on the Ideas to Action Critical Thinking Initiative (University of Louisville, 2023b). According to them, critical thinking instruction "should not be relegated to one or two disciplines or departments with discipline specific language and conceptualizations", it "should be explicitly infused in all courses so that critical thinking skills can be developed and reinforced in student learning across the curriculum", and "the use of a common approach with a common language allows for a central organizer and for the development of critical thinking skill sets in all courses" (University of Louisville, 2023). In order to determine the level of formation and quantitative parameters of the dynamics of critical thinking skills in 1st year philology students of Kyiv National University of Technologies and Design, we used a questionnaire with adapted tasks Starkey (2004), widely used in the world.

3. Methodology

In our study we have focused on the analysis of our own professional reflections and experience of fellow teachers of the Department of Philology and Translation of Kyiv National University of Technologies and Design on the effectiveness of available funds from the arsenal of undergraduate studies during the first year of 1st year philology students, their skills of critical thinking and adherence of applicants to the principles of academic integrity. We have analysed this information with quantitative indicators of the development of critical thinking skills and academic integrity in 1st year philology students at the end of the 2nd semester of the 2021/2022 academic year compared to the 1st semester of the same year. The obtained results of the research allow us to state that, first of all, we have singled out such types of educational strategies and tasks that can be applied in philological studies, and which allow to improve the skills of critical thinking. Therefore, we will disseminate the gained positive experience and we will implement similar educational tasks in the practice of the next, 2nd year, training the philology students of our university in order to stimulate further progress in this field. And secondly, our previous assumption that the awareness of the need to adhere to academic integrity as a learning strategy is inextricably linked to the development of critical thinking in our respondent students has come true.

The research question of our article concerns how and by what means teachers of institutions of higher education have the opportunity to influence the development and improvement of critical thinking skills and academic integrity among students of philology of Kyiv National University of Technologies and Design during their bachelor's degree. The English language: translation in business communications. Educational professional program (Ministry of education and science of Ukraine, 2021). Through the prism of the latest authoritative theoretical research in this field, we have analysed as fully as possible our teaching practical experience in helping our future prospective interpreters master these important competencies both for their successful learning and for further fruitful professional activity.

The main methods of data collection of our article are questionnaires of applicants with closed and open questions and scientific observation of the academic success of students of philology and the means to achieve them. We have analysed the positive dynamics of correct answers of philologists regarding the use of critical thinking and academic integrity in the second questionnaire relative to the first one: the number of correct answers of students to closed questions, and the course of thought demonstrated by bachelor

philologists at the end of the first year. Therefore, we have considered the most effective tools, in our opinion, available in our pedagogical case (in particular, those based on the use of Bloom's taxonomy (1956), aimed at developing critical thinking in the study of 1st year students of the philological cycle. This ensures the reliability and validity of our study.

As we study the dynamics of the development of these skills in academic integrity and critical thinking among all 1st year students of philology at Kyiv National University of Technologies and Design in general, the sampling strategy provides a plan to form one representative group from these applicants, covering all available 35 people. The total number of respondents corresponds to statistical considerations. We conducted the first, initial, survey in September 2021 among our philology students at the beginning of the first year of their bachelor's degree in order to find out the initial level of formation of their skills in academic integrity and critical thinking. In May 2022, at the end of the first year of the program by the same group of students of philology, we conducted a second, final, questionnaire to find out whether respondents were able to improve their competencies in the studied aspects. We also had to analyse what types of learning strategies and tasks from the available philological arsenal for us, lecturers of Kyiv National University of Technologies and Design, are helpful for the development of the students' desired skills in the field of critical thinking and forming a stable conscious experience of adherence to the principles of academic integrity among them. So, the total number of respondents was 35 students and 40 lecturers of Kyiv National University of Technologies and Design.

In our study 1st year philologists of Kyiv National University of Technologies and Design and their lecturers participated as anonymous respondents voluntarily and on the basis of confidentiality, regardless of their gender, nationality, age, social status, political and other preferences. Thus, the plan of our study prevented human rights violations and ensured maximum security, honesty and transparency for participants.

The main strategy of our study is based on views on critical thinking and academic integrity as a partial example of its implementation in relation to university education, set out in the theory of Paul & Elder (2020) and the development of their followers, such as scholars at the University of Louisville (University of Louisville, 2023b), and derive from these studies. We also used elements of the well-known Starkey (2004) questionnaire in order to identify and record the level of formation and quantitative parameters of the dynamics of indicators of critical thinking skills among the 1st year students of philology. Thus, we used both quantitative and qualitative research methods. We used two of our students' questionnaires on academic integrity and critical thinking: at the beginning of their first university year and at the end of this year. In order to come to an intermediate conclusion about the object of study, we have analysed and interpreted quantitative indicators.

4. Results

Since our article describes how we develop the content of the research question regarding the results of the impact of the educational components of the program of the department of philology and translation of KNUITD "The English language: translation in business communications" and the corresponding content of educational activities, we have analysed the improvement of critical thinking skills and academic integrity among philology students of the 1st year of the bachelor's degree at the end of the 2nd semester compared to their results of the 1st semester after 10 months of studying the disciplines "The English language practice", "Practical English phonetics", "Practical English grammar", "Business Ukrainian language in translation aspect", "General linguistics", "Ukrainian literature from antiquity to the present in the world and cultural context", "Ukrainian statehood: history and modernity", "Philosophy, political science and sociology" and the course of educational practice from September 2021 to June 2022. For the most comprehensive study of the identified positions, we chose the analytical strategy of the structured content analysis.

As for the awareness of philology applicants regarding the observance of academic integrity, the situation among the respondents of our study was as follows: at the initial stage (the beginning of the 1st semester of the 2021 – 2022 academic year), the questionnaire training of the applicants showed that they were mostly or not at all familiar with the concept of academic integrity (85 % of respondents), or from their previous experience in high school did not realize the importance of ethical principles and rules defined by law, which should be guided by participants in the educational process (62 % of respondents from those who indicated that they were familiar with the concept of academic integrity, or 91 % of the total number of applicants). However, we can testify that at the control stage (at the end of the 2nd semester of the 2021 – 2022 academic year), the indicators regarding this aspect have improved significantly: the total number of respondents who answered that they know about academic integrity has increased by 6.5 times, and the number of those who began to follow its rules, increased 10 times. In particular, it is worth noting that during the 1st year of study, philology students were convinced of the existence of a direct correlation between the fulfilment of academic integrity requirements, their own academic success and fruitful further professional activity: our calculations showed an increase in the total number of such achievers by an impressive 16 times (Table 1).

Table 1.
Awareness of 1st year philology students about academic integrity

	initial stage	control stage
If you are aware of the concept of academic integrity, %	15 %	98 %
If you answered yes to the first question, do you adhere to academic integrity in your studies, %	38 %	89 %
If you answered yes to the first question, do you feel there is a relationship between maintaining academic integrity and your academic success, %	30 %	98 %

Source: compiled by the authors

During the two semesters of studying, the philology students repeatedly consulted with their teachers on the mentioned topics and were convinced by their own experience that the participants of the educational process at KNUTD adhere to the "Code of Academic Integrity" (Ministry of Education and Science of Ukraine, 2021). In the group of students under our review, there were several cases when the teachers did not credit the provided control tasks with signs of plagiarism from various academic disciplines and returned them for revision with the necessary explanations. For example, one of the teachers mentioned 5 such cases during the teaching of one of the academic disciplines. In addition, the future undergraduate translators completed the educational practice of 1st year students, in the framework of which they had to learn theoretical materials on the basics of academic relationships at institutions of higher education, complete the proposed practical tasks, practice on the test simulator and take a test control (Table 2). The complex of such activities led to the fact that at the beginning of the 2nd semester, the general level of students' knowledge of the established practice of academic relations in Ukrainian institutions of higher education increased significantly, because 97 % of the test takers successfully completed the control test tasks, and 72 % of the test takers demonstrated a high and average level formation of this competence.

Table 2.

The level of competence formation in the basics of academic relations in institutions of higher education among 1st year philologists

	control stage (testing as part of the educational practice of 1st year students, February 2022)
High level of competence formation (90-100 points), %	37 %
Sufficient level of competence formation (74-89 points), %	35 %
Satisfactory level of competence formation (60-73 points), %	25 %
Unsatisfactory level of competence formation (0-59 points), %	3 %

Source: compiled by the authors

During our study, we have twice conducted questionnaires of philology students according to the method of Starkey (2004) in order to determine their level of development of critical thinking competence. We can see that the results of the control stage at the end of the 2nd semester of 2021 – 2022 academic year demonstrated the positive dynamics and effectiveness of the methods and techniques we used in the educational process (Table 3). Thus, at the control stage at the end of the 2nd semester of the 1st year of study, all indicators considering success increased: the percentage of students who demonstrated a high level of competence in critical thinking increased by 2 %, a sufficient level by 4 %, a satisfactory level by 11 %. The total percentage of those students who had a sufficient and higher level of competence in critical thinking increased by 17 %, which can be considered to be a good indicator.

Table 3.

The level of critical thinking development competence among 1st year philologists

	initial stage	control stage
High level of competence formation (90-100 points), %	3 %	5 %
Sufficient level of competence formation (74-89 points), %	13 %	17 %
Satisfactory level of competence formation (60-73 points), %	34 %	45 %
Unsatisfactory level of competence formation (0-59 points), %	50 %	33 %

Source: compiled by the authors

In order to achieve the considered results of the control stage (Table 3) during the studies of the students of the 1st year of the bachelor's degree in the educational program "The English language: translation in business communications" of the mandatory disciplines of the cycle of general and professional philological training, we widely and systematically applied the following methods and techniques for the development of critical thinking, such as: group discussions, cluster compositions, six thinking hats according to de Bono, questions according to Bloom, Socratic discussion and taxonomy of Socratic questioning, analysis of specific situations, conceptual tables, reading with stops, summarizing, writing annotations and reviews, etc. (Kharchenko, 2018, p. 26-51).

The systematization of the survey of academic and teaching staff who provide teaching of the listed disciplines and philology students at the initial and control stages have showed some changes in the distribution of the most effective and, in their opinion, the most comfortable types of educational activities for stimulating the development of critical thinking (Table 4). Thus, analysing the indicators of both groups, which correspond to the stages of the beginning and completion of the 1st course by acquirers-translators, it is worth noting that the academic staff of the Department of Philology and Translation of KNUTD did not change their opinion about the most suitable of the available methods of working on the development of

the specified skill: we monitored fluctuations within 2-3 % on average. The change in the distribution of similar preferences among the students demonstrated that our 1st year philology students during the 10 months of their studies processed a significant layer of information about critical thinking and means of its development and got the opportunity to determine the most appropriate methods in the context of the educational components they have mastered, that among other things, stimulated their involvement in the educational process, responsibility for its results, as well as the development of intercultural communicative competence (Dvorianchykova, Bondarchuk, Syniavska, & Kugai, 2022). Thus, if during the survey at the initial stage, the applicants rated each of the methods of developing critical thinking almost equally, then during the survey at the control stage, the methods of group discussion, analysis of specific situations, reading with stops, questions according to Bloom (1956) turned out to be the most popular from the philological arsenal and played a special role during the discussion of issues studied in the classroom. Together, these methods were noted as the most popular by 72 % of all applicants.

Table 4.

Distribution of implemented methods for the development of critical thinking according to the level of satisfaction of philological stakeholders

Stakeholders	Academic and teaching staff		1 st years philology students	
	initial stage	control stage	initial stage	control stage
Methods				
Analysis of specific situations, %	19 %	17 %	10 %	20 %
Group discussion, %	13 %	15 %	10 %	21%
Questions according to Benjamin Bloom, %	17 %	12 %	10 %	10 %
Writing annotations and reviews, %	10 %	12 %	10 %	5 %
Summarizing, %	7 %	8 %	7 %	5 %
Cluster composition, %	3 %	5 %	9 %	7 %
Socratic discussion, %	10 %	9 %	8 %	5 %
Special role during the discussion, %	7 %	6 %	10 %	9 %
Reading with stops, %	7 %	8 %	13 %	12 %
Six thinking hats, %	6%	8 %	13 %	5 %
Other, %	1 %	–	–	1 %

Source: compiled by the authors

So, formulating the interim results of the analytical part of our investigation and summarizing it, we have to note that after 10 months of research during the two semesters of the 2021 – 2022 academic year of the principles of the teachers' influence at the institution of higher education on the development and improvement of critical thinking skills and academic integrity among 1st year philology students, we, firstly, have made sure of the effectiveness of the measures described in the article, and secondly, we have developed and tested a working model that will be used in further educational activities (Table 5).

Table 5.

Components of a working model of means of influence on the development and improvement of critical thinking skills and academic integrity among philology students

Stage 1 –	survey and test applicants at the initial stage in order to diagnose the level of their knowledge of academic integrity and their development of critical thinking skills.
Stage 2 –	inform applicants about the culture of academic integrity in the institution of higher education and comprehensively and systematically encourage them to adhere to it.
Stage 3 –	apply methods for the development of critical thinking among students during their study of academic disciplines.
Stage 4 –	survey fellow teachers about their professional opinion and advice on the best means and methods of developing the studied competencies and to adjust the educational process according to the obtained results.
Stage 5 –	survey and test applicants at the control stage to determine the growth of their knowledge of academic integrity and improve their critical thinking skills.

Source: compiled by the authors

5. Discussion

The suggested study reflected the way we have been trying to answer the question – how and with the help of what factors academic staff of institutions of higher education can influence the development and improvement of critical thinking skills and academic integrity among philology students during their studies in the 1st year of the bachelor's degree. The initial strategy of our study is the generally accepted understanding of critical thinking in modern science as a system of higher-order judgments that allows to analyse information in such a way as to make rational decisions based on it. We consider academic integrity in relation to our study as one of the cases of the implementation of critical thinking in the conditions of the necessity for university education. Our experiments have demonstrated that our previous hypothesis was true concerning the awareness of the need to adhere to academic integrity as a learning strategy is inextricably linked to the development of critical thinking in our student respondents. To achieve the goal of the study, we used the following main methods: survey and testing at the initial and control stages (at the beginning of the 1st semester of study and at the end of the 2nd) of the formation level of knowledge, skills and abilities of the students with closed and open questions, scientific observation during their studies for 10 months of the 2021-2022 academic year based on the academic success of 1st year philology students and the means of their achievement, surveying and questionnaires of academic staff who carry out the educational process in the academic classroom of the mentioned students. The total number of respondents was 35 students and 40 lecturers.

Owing to the study, we have discovered that, firstly, teachers can significantly influence the level of awareness among 1st year students of their own need to follow the ideals of academic integrity and stimulate the further development of this culture in the future. Secondly, at the beginning of students' studies at the university, during only two semesters of the bachelor's degree, teachers are able to build an educational process in such a way that within the framework of the mastered academic disciplines successfully develop critical thinking skills, which has been confirmed by our experiments. Thirdly, the mentioned steps also affect the level of students' self-awareness as equal members of the educational process, stimulate the development of responsibility and consciousness regarding mastering the future profession. Fourthly, at the current stage of the study, we have identified the most popular among the implemented methods for the development of critical thinking according to the level of satisfaction with them among philological stakeholders. This, among other things, inspires us in the future to find out the reasons that led the respondents to consider certain methods and techniques as the most effective ones. And fifthly, we have developed a working model of means of influence on the development and

improvement of critical thinking skills and academic integrity among philology students, which we plan to test and improve in the future educational process in the studied audience training philology students for 2 – 4 undergraduate courses and those 1st year students who will begin studying under the mentioned educational program “The English language: translation in business communications” in the 2022-2023 academic year.

6. Conclusion

Thus, among the benefits of our work and the prospects for continuing the study, we see the following. Firstly, to study the further improvement of the skills of observing academic integrity and applying critical thinking by our philology students during their studies in the 2nd, 3rd and 4th years of the bachelor’s degree, to make the necessary calculations and analyse the changes in quantitative and qualitative indicators according to the already developed model. Secondly, in the future, to identify such types of educational strategies and tasks that can be applied among philological studies in general and allow to for the effective and harmonious improvement of students' critical thinking skills and foreign language communication competence.

We will share the positive experience we have already gained with the Ukrainian and international professional community. We will implement the described educational strategies in the practice of teaching philology students of our university in order to stimulate their further progress in the specified field of development of competencies of academic integrity and critical thinking.

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Filosofía e Inteligencia Artificial, una perspectiva ética/teleológica

Philosophy and Artificial Intelligence, an ethic/teleological perspective

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Resumen

La presente reflexión surge desde la necesidad de plantear y analizar el uso de la tecnología de Inteligencia Artificial desde la perspectiva filosófica de la ética, generando advertencias sobre su afectación al ser humano en su cotidianidad. No es un tratado en demérito del uso apropiado de la misma, pues las tecnologías como la Inteligencia Artificial no dependen de sí mismas, es decir, no son buenas o malas, pues dependen del uso y abuso que puede dar el ser humano, en favor o contra de la propia humanidad. Por otra parte, la ética es una reflexión permanente y abierta que exige compromisos ontológicos del actuar humano, pues se sustenta en asumir valores como principios rectores de la acción personal y social.

Palabras clave: Autonomía. Ética, Tecnología, Inteligencia Artificial.

Abstract

This reflection arises from the need to state and analyze the Artificial Intelligence technology use from the philosophical perspective of ethics, generating warnings about its effects on people's everyday life. It is not a treatise about the demerit of the appropriated use of itself, which is that technologies such as Artificial Intelligence do not depend upon themselves, it means, they are not good or bad ones, so they rely on the use and abuse that human beings can give them, in favour or against humankind itself. On the other hand, Ethics is a permanent and open reflection that demands ontological commitments from human actions, in that it supports itself by assuming values like guiding principles of personal and social action.

Keywords: Artificial Intelligence, Philosophy, Perspective.

1. Introducción

La tecnología de la información es un tema relevante en el siglo XXI, el tránsito de la web 1.0 a 2.0, tal como lo plantea Morales (2014, 2013, 2010), impactó el tratamiento de la información y dio origen a nuevos escenarios en el uso de la tecnología como el conectivismo de Siemens (2004). Este último plantea nuevas perspectivas sobre el aprendizaje en la era digital, incluyendo algunas herramientas como los sistemas de gestión de aprendizaje, los blogs, los wikis y las redes sociales. Según Siemens y Down (2004), estas tecnologías permiten a los estudiantes crear y compartir conocimientos, lo que sugiere la necesidad de que los educadores adopten un enfoque más abierto y colaborativo para el aprendizaje. En este sentido, el

conectivismo implicó un cambio paradigmático en educación, reconociendo la importancia de las redes sociales y la interconexión de ideas como elementos fundamentales del aprendizaje. Eso como detalle en el campo educativo, pero también en campo de los negocios, de organizaciones inteligentes y en los estallidos sociales como la Primavera Árabe, donde el uso de la tecnología fue determinante para la organización de las personas.

En la actualidad, año 2023, la Inteligencia Artificial (IA) es una de las tecnologías más relevantes, su impacto en la sociedad ha generado un debate en torno a las consecuencias de su uso. Por ejemplo, según la misma IA hace referencia a trabajos donde se puede sustituir al ser humano y la pérdida de empleos como:

1. Trabajos administrativos y de oficina: La IA puede automatizar muchas tareas administrativas y de oficina, como la gestión de correo electrónico, la programación de reuniones y la gestión de archivos.
2. Trabajos de atención al cliente: La IA puede ayudar a proporcionar respuestas rápidas y precisas a las preguntas de los clientes, lo que puede reducir la necesidad de personal de atención al cliente en vivo.
3. Trabajos en el sector de la salud: La IA puede ayudar en el diagnóstico y el tratamiento de enfermedades, así como en la gestión de registros médicos y la programación de citas.
4. Trabajos en el sector financiero: La IA puede ser utilizada para el análisis de datos financieros y para la gestión de carteras de inversión.
5. Trabajos en el sector manufacturero: La IA puede ser utilizada para la automatización de procesos de producción y para la gestión de la cadena de suministro¹ (OpenAI, 2023).

Ahora bien, no es tanto, la posible pérdida de empleos sino la deshumanización de la sociedad lo que está llevando a cuestionar los límites éticos y morales, pues estos deben guiar el desarrollo de cualquier ciencia y tecnología; por ello, desde una perspectiva filosófica, ante la IA se plantean interrogantes sobre el humano, su relación con la tecnología, el papel a jugar en la transformación del mundo y la pregunta sobre el telos.

No obstante, es importante tener muy claro: la tecnología es una herramienta o instrumental que puede ser utilizada para mejorar la calidad de vida de las personas!, siempre y cuando se utilice de manera responsable y consciente, es decir: bajo axiomática ética. Por ello, la IA es una tecnología y su uso puede transformar la manera de interactuar las personas en y con el mundo, pero también puede tener consecuencias imprevisibles al *Dasein* humano. Desde una perspectiva filosófica, el uso de la IA lleva a reflexionar y cuestionar sobre el lugar ocupado por el ser humano en el mundo y su relación con la tecnología.

Ciertamente, la historia de la humanidad está repleta de ejemplos de cómo el uso del poder y la tecnología puede tener consecuencias imprevisibles, como lo demuestran los mitos de Ícaro y Dédalo, el Golem y Frankenstein; en este sentido se hace la advertencia de planteamientos más amplios y comprometedores en la actualidad como el *transhumanismo h+*, filosofía que busca utilizar la tecnología para mejorar la condición humana, tanto física como mentalmente, con la idea de que la tecnología puede ayudar a superar las limitaciones biológicas y mejorar la calidad de vida humana. Estos relatos advierten al ser humano, el buscar siempre superar sus limitaciones y crear nuevas realidades; sin embargo, está la necesidad de precaución y responsabilidad al hacerlo. Por ello, la filosofía como tal desempeña un papel fundamental para comprender las implicaciones del uso, aplicación de la IA y cualquier otra tecnología. Pues, en lugar de reunir, simplificar, sintetizar información para obtener datos pertinentes y necesarios, la filosofía nos

¹ Informe McKinsey Global Institute: "Jobs lost, jobs gained: What the future of work will mean for jobs, skills, and wages" (2017).

Informe del Foro Económico Mundial: "The Future of Jobs Report" (2020).

Informe de la Comisión Europea: "Artificial Intelligence for Europe" (2018).

Informe del Banco Mundial: "World Development Report 2019: The Changing Nature of Work" (2019)

invita a reflexionar sobre las implicaciones más profundas de acciones y decisiones humanas, especialmente al uso de tecnologías tan poderosas como la IA.

Paralelamente, es importante tener en cuenta que la IA no debe ser vista y asumida como un fin en sí misma, sino como una herramienta para mejorar la calidad de vida humana. Por lo tanto, es necesario abordar los desafíos éticos y morales que surgen en la aplicación de la IA desde una perspectiva filosófica, para garantizar que los derechos humanos sean respetados y que la tecnología sea utilizada de manera justa y responsable.

En definitiva, la filosofía ayuda a comprender la naturaleza de la IA y su relación con la sociedad e invita a reflexionar críticamente su uso y aplicación en el mundo actual. No hay duda ni cuestionamiento cuando se tiene que la IA es una herramienta poderosa para mejorar la calidad de vida de las personas, siempre y cuando se utilice de manera responsable y consciente, teniendo en cuenta las implicaciones que tiene para la naturaleza humana y su relación con el mundo. Por ello, es necesario partir de la pregunta: ¿Qué es la IA?

Según Russell y Norvig (2010, p. 2), "*La IA se basa en la creación de algoritmos y modelos matemáticos que permiten a las máquinas procesar grandes cantidades de datos y reconocer patrones y regularidades*" y "*aplicada en una amplia variedad de campos, como la robótica, la visión por computadora, el procesamiento del lenguaje natural, la toma de decisiones en tiempo real y la automatización de tareas complejas*" (Koehn, 2017, p. 1). De esta forma, hay nuevas expectativas en cuanto al llamado progreso humano impactado por lo digital en cuanto a las tecnologías de la información se refiere.

Analizando la IA desde una perspectiva filosófica, según Sterman (2001), los escolásticos establecen la existencia de naturaleza creada y creadora, creada porque es el ser humano quién la creó, la inventó y la utiliza; al mismo tiempo creadora, porque esta realidad puede generar cosas nuevas como mejoramiento de la información y su procesamiento para crear conocimientos. De hecho, la transformación de la información en conocimiento es algo que la IA desarrolla para el sujeto que la dirige y maneja. Por ello, hay advertencias de trabajos y empleos que podrían ser dejados por el uso de la IA, especialmente por la robotización de las tareas. Eso no significa que haya maldad o doble intencionalidad por parte de la IA frente a lo humano. Es el hombre quien establece y determina su uso a favor o contra la humanidad. Cabe recordar que la información hasta que el sujeto no la formaliza y la hace suya, no se transforma en conocimiento.

2. Referentes teóricos o revisión de literatura

Ética en el uso de la Inteligencia Artificial

Heidegger (2000), planteó que, frente al avance de la técnica y la ciencia del siglo XX, el problema del ser había caído en el olvido hoy, frente al avance de la IA, pareciera que el ser humano puede ser desplazado, por ello la advertencia se hace pertinente nuevamente. Claramente la tecnología no es sólo un medio para alcanzar los fines, también puede afectar profundamente la forma de ser y pensar (Heidegger, 1954), pues la tecnología pasa por encima de todo y, sobre todo. De esta manera, es necesario retomar esas advertencias de "*vale la pena pensar aquello que da que pensar*" (Heidegger, 2010), esto se vuelve una exigencia fundamental en momentos en que el ser humano se distrae o como lo advierte Arendt (1984), deja de pensar. Por su parte, Mires (1996), manifiesta cómo la revolución de la tecnología de la información, se infiltró en la vida humana de una manera significativa, en palabras del autor "*es una revolución que nadie soñó*", ahora la vida pende de ella en todo sentido.

Por su parte, Morales (2013), frente al desmedido uso de las tecnologías plantea dos nuevas desviaciones como son la *tecnoddependencia* y la *tecnoalienación*, donde el uso de la tecnología no es el problema, sino

el dejar que ella se convierta en el centro de la propia existencia como problema ontológico (Morales, 2022), y antropológico (Morales y Alvarado, 2015). Indudablemente al igual que cualquier otra singularidad en favor del progreso humano la IA llega para quedarse y en términos de Heidegger (2000), estar a la mano, como lo corrobora Steve Job para quien: "La simplicidad es la máxima sofisticación", "La tecnología es nada. Lo importante es que tengas fe en la gente" y "Diseño no es sólo lo que se ve y se siente", "el diseño es cómo funciona" (Isaacson, 2012). Es decir, la tecnología y sus instrumentos son objetos que pueden aligerar la vida, dar comodidad y generar bienestar.

Por su puesto, la discusión en torno a la ética suscita muchas interrogantes y genera perspectivas amplias y muy diferentes. El hecho de analizar el significado del término implica a múltiples perspectivas pues, hay todo un historial como lo plantea Camps (2013), haciendo un recorrido breve, pero interesante, del desarrollo de la ética en la historia desde los presocráticos hasta la aplicación de esta donde advierte:

El comportamiento moral ha sido objeto de preocupación por parte de los filósofos por lo menos por dos razones. Ha preocupado el destino de la persona, sus fines en esta vida, su razón de ser o, como suele decirse, el sentido que tiene vivir. ¿Qué es vivir bien? ¿En qué consiste una vida buena? La segunda preocupación fundamental ha sido la convivencia ¿Cómo regular la vida en común preservando al mismo tiempo la autonomía de cada individuo? (p. 12).

A lo largo de la historia y evolución humana, el mismo hombre se ha preguntado y sigue preguntando el por qué vivir, cómo vivir y la relación con sus alter ego. En este particular, tanto el progreso como el porvenir han estado acompañados por inventos y desarrollo de conocimiento e inteligencia humana, la cual ha ido generando nuevos conocimientos y los ha convertido en nuevos saberes generando acciones e implicaciones para el vivir. De esta forma, hoy vuelve al escenario, de manera recursiva, el problema sobre el quién se determina y qué lo determina. Por ello se hace la insistencia en volver al planteamiento de Kant (2013): *Sapere aude!* (¡atrévete a pensar por ti mismo!). El autor ve en la autonomía humana el punto máximo de la racionalidad y madurez, por tanto, no hace faltan leyes ni mandatos, lo importante es que el sujeto asuma su ser con una adultez tal que: *"Obra de tal modo que la máxima de tu voluntad pueda valer siempre al mismo tiempo como principio de una legislación universal"* (Kant, 2003, p. 25).

Ahora bien, la autonomía lleva al sujeto a su autodeterminación y esta se ancla en los principios asumidos como lineamientos para realizarse como ser humano, aquel ente consciente y el cual asume una manera de vivir y realizarse. A la determinación de conducta mediante estos principios es lo que la filosofía advierte como ética, el cual es un debate permanentemente abierto, complejo y recursivo. Al respecto Camps (2013), hace una revisión extraordinaria en la historia de la ética, además en ampliada como enciclopedia donde esta autora es la compiladora y editora (Camps, 2002). En general, se puede plantear el término ética como equívoco en terminología aristotélica o polisémico en significación más de actualidad pues hay muchas significaciones e interpretaciones. Haciendo un ejemplo del planteamiento anterior, puede advertirse la amplitud y significatividad del asunto cuando extraemos brevemente el significado de ética con base en algunos autores, elegidos al azar:

Para Aristóteles (1973), la ética se refiere a la búsqueda de la felicidad o el bienestar humano. Según él, la ética se ocupa de determinar cómo las personas deben actuar para alcanzar la felicidad o el bienestar. Aristóteles argumenta que la virtud es el camino hacia la felicidad y que la ética se basa en la adquisición de virtudes morales y excelencias personales.

Tomás de Aquino (2010), la ética está basada en la ley natural y en la razón. Según él, las acciones humanas deben estar en línea con la ley natural, que es una ley universal y objetiva que se deriva de la naturaleza humana y la razón. La ética, por tanto, implica actuar en conformidad con la ley natural y la razón.

Russell (2009, 2007, 1961), filósofo inglés de perspectiva amplia en su pensar: pragmatismo, positivismo lógico, empirismo, filosofía analítica y con una gama amplia de tratados y escritos, sintetiza: ética se refiere a la búsqueda del bienestar humano en una sociedad justa y equitativa. El argumento clave de la misma es estar basada en la razón y en la empatía hacia los demás, la búsqueda del bienestar y la felicidad no sólo para uno mismo, sino también para los demás miembros de la sociedad.

Otro de gran influencia en la ética desde la perspectiva política y los elementos ideológicos es Habermas (1983), quien sostiene, la ética es una disciplina que se ocupa de las normas y valores los cuales rigen la conducta humana y permite distinguir lo que está bien de lo que está mal. Para el autor, la ética no es sólo una cuestión de preferencias personales o culturales, pues tiene una base universal en la razón comunicativa. En el mismo orden de ideas argumenta que la ética se basa en la idea de la "comunicación moral" entre personas libres e iguales (Habermas, 1983). Esta comunicación implica el uso del lenguaje para alcanzar un entendimiento racional acerca de las normas y valores que regulan la conducta humana. Para Habermas, la ética no puede ser reducida a una cuestión de intereses o poder, sino que debe ser fundamentada en la razón y la igualdad (Habermas, 2010).

En "El discurso filosófico de la modernidad", Habermas (1991), plantea la ética como parte de un proyecto más amplio de emancipación humana, desde la cual se busca liberar a los individuos de las opresiones y limitaciones impidiéndoles vivir una vida auténticamente libre y plena. La ética, entonces, se convierte en una herramienta para la crítica de las estructuras sociales y políticas mediante las cuales se perpetúan la injusticia y la desigualdad. Para ello se requiere de la comunicación y fundamentalmente en los lenguajes comunicativos profesados en las sociedades, Habermas (1992), desarrolla su teoría de la "ética del discurso", basado en la idea de que las normas y valores éticos deben ser justificadas mediante un proceso de argumentación racional entre personas libres e iguales. Según Habermas (ob. cit.), la ética no puede ser impuesta por la autoridad o la tradición, sino que debe ser el resultado de un diálogo libre y abierto entre los sujetos implicados.

Por su parte, Adela Cortina (2003, 1996, 1994), autora de gran relevancia en la actualidad por su trayectoria como estudiosa de la ética en tiempos de contemporaneidad inmersos en la era digital; esboza la ética como la búsqueda de una sociedad más justa y solidaria, en la que se respeten los derechos humanos y se promueva el bienestar común. Según ella, la ética implica la toma de decisiones responsables en relación con los demás y con el entorno. La ética, por tanto, se basa en valores como la solidaridad, el respeto, la responsabilidad y la justicia social.

Ciertamente, hay perspectivas desde lo ontológico como la de Rahner (1965), para quien la ética no puede ser entendida como un conjunto de normas o principios universales y abstractos, sino que debe ser comprendida como una relación personal con Dios y con los demás seres humanos. Desde esta perspectiva, la ética no es un tratar de cumplir normas o mandamientos, sino de vivir de una manera que sea coherente con la relación personal que el ser humano tiene con Dios y con los demás seres humanos, esto desde una perspectiva religiosa. Por ello, la base de la ética es la conciencia, entendida como la capacidad del ser humano para percibir la voz de Dios en su interior. La conciencia es la que permite al ser humano discernir lo que es correcto de lo que es incorrecto en cada situación concreta, y es la que le guía hacia una acción moralmente correcta.

En el mismo orden de ideas Rahner (1965), también destaca la importancia de la libertad, entendida como la capacidad del ser humano para elegir lo que es correcto y actuar en consecuencia. La libertad es la que permite al ser humano responder a la llamada de Dios y vivir de una manera ética.

Con toda esta gama de perspectivas todas totalmente válidas, preguntamos a la IA, Chatgpt actualizado hasta 2021, sobre lo que significa ética para la IA, con la correspondiente respuesta:

Como una Inteligencia Artificial, mi función es proporcionar información y respuestas precisas y objetivas, pero no tengo una perspectiva ética propia, ya que carezco de conciencia o subjetividad. Sin embargo, en la investigación y desarrollo de la Inteligencia Artificial, se han planteado diversas perspectivas éticas sobre su uso y desarrollo. Algunos expertos en ética de la IA argumentan que la ética de la IA debe estar basada en la responsabilidad, la transparencia, la inclusión y la privacidad, entre otros valores.

Por ejemplo, la ética en la IA podría implicar la responsabilidad de los desarrolladores y los usuarios de la IA para garantizar que se utilice de manera responsable y que no se cause daño a las personas. También podría implicar la inclusión y la equidad en la creación y el uso de la IA, para evitar el sesgo y la discriminación en la toma de decisiones.

En general, la ética de la IA es un tema en constante evolución y discusión, y se espera que se siga debatiendo y evolucionando a medida que la tecnología avanza y se utiliza cada vez más en diferentes ámbitos y contextos.

De acuerdo con el programa de IA, la ética en sí misma es dinámica, no es algo estático sino generadora de tensionalidad en el pensar humano y quehacer filosófico, es disciplinar y advierte implicaciones que pueden afectar en profundidad al ser humano, pero la IA estará siempre sujeta a la determinación del ser humano. Como lo plantean Morales y Martínez (2011), el único que puede actuar desde la ética, con ética o ausencia de ella es la persona, el ser humano. Las cosas no son buenas o malas en sí misma, es el sentido de lo humano quien las acredita o no.

3. Metodología

Como aspecto de desarrollo metodológico se realiza un análisis desde una perspectiva del racionalismo crítico, es decir se ha desarrollado una reflexión de dos contenidos, el de la realidad en cuestión donde la humanidad es afectada por un fenómeno que impacta la vida y cotidianidad del ser humano y por la otra, aspectos del ethos y ontología sobre preguntas en torno al que hacer humano en función de compromisos teleológicos. Es decir, se ha realizado una reflexión desde la filosofía cuestionando el impacto de la IA en la sociedad actual, pero además se han tenido en consideración, la axiología y principios de una perspectiva de racionalidad ética para llevar adelante esta reflexión, bajo argumentos de Heidegger (2010) y Arendt (1984) en torno a la necesidad de pensar.

Es así como, desde el contexto filosófico, crítica es evidenciar preocupaciones y buscar esbozar razones que puedan dar cuenta de las situaciones por las que transita el ser humano, además no se trata de encontrar respuestas, es la necesidad de generar siempre preguntas que permitan generar pensamientos y reflexiones en torno a la realidad. En este caso el Dasein humano inmerso en una era donde la IA se ha posicionado de manera significativa y determinante.

4. Discusión

En cuanto al porvenir de la IA, hay múltiples escenarios en cuestión, como toda novedad y singularidad que impacta al ser humano tiene quienes auspician y tienen detractores, a veces en juego de poder para tratar de sacar mejor provecho a la situación, especialmente en sentido económico. Pero a pesar de ello la IA es una tecnología llegada para quedarse y establecerse, el asunto seguirá siendo un problema del ser humano en cuanto a su uso, por ello autores como Torreones (2021), reflexionan y sostienen la necesidad de responsabilidad y civismo en el uso de la misma, por su parte Dignum (2020), examina temas como la transparencia y la explicabilidad de los sistemas de IA, la equidad y la justicia algorítmica, la privacidad y la protección de datos, así como la responsabilidad y rendición de cuentas de los sistemas de IA. Propone enfoques prácticos y principios éticos para guiar el diseño, desarrollo y despliegue de la IA de manera responsable. En el mismo sentido proporciona una guía práctica para los investigadores, profesionales y

formuladores de políticas que deseen abordar los desafíos éticos y sociales asociados con la IA (Dignum, 2019).

Ciertamente, todo esto implica una reflexión permanente pues, toda la vida humana ya ha comenzado a ser impactada, modificada e inmersa en esta vertiente de la era digital llamada IA, no obstante, hay otros elementos como el transhumanismo, corriente filosófica que defiende el uso de la ciencia y la tecnología para mejorar las capacidades físicas, mentales y emocionales del ser humano, con el objetivo de superar las limitaciones biológicas y mejorar la condición humana. La doctrina del transhumanismo se basa en la idea de que el ser humano puede y debe superar sus limitaciones biológicas mediante la aplicación de la tecnología y la ciencia.

Entre las ideas asociadas al transhumanismo se encuentran la idea de la inmortalidad tecnológica, la mejora de la inteligencia humana mediante la fusión con la inteligencia artificial, la creación de seres humanos mejorados genéticamente y la exploración de nuevas formas de conciencia y de experiencias vitales (OpenAI, 2023). Por lo cual se vuelve a la discusión entre dos grupos que pueden ser muy antagónicos y opuestos donde, mientras algunos defienden el transhumanismo como un medio para mejorar la calidad de vida y superar las limitaciones humanas, otros lo ven como una amenaza para la integridad y la dignidad humanas.

5. Reflexiones de cierre

A partir de lo anterior, el debate o reflexión desde y en torno a la ética, debe ser algo permanente y recursivo, pues no necesariamente se da en la sociedad las mismas respuestas y se generan las mismas condiciones. Los escenarios de acción de lo humano cambian permanentemente, como lo diría el sabio Heráclito: "Πάντα ῥεῖ" (panta rei = Todo fluye), estos cambios vistos como progreso han permitido a la humanidad adentrarse profundamente en dimensiones antropológicas como los derechos humanos y su defensa, aun cuando no siempre se han respetado. Sin embargo, las legislaturas y fundamentalmente los principios en favor de lo humano intentan preservar lo humano, aunque sea de manera teórica generando una actitud crítica permanente.

En este sentido, aun cuando se transita una era digital, de la información; se avizora que, algunas sociedades están sumergidas en la transformación de esta en conocimiento. Ahora bien, el problema no es el tema de la información sino su transformación en conocimiento como lo viene advirtiendo el autor Morales (op, cit.), porque, en alguna forma, las sociedades ya están inmersa en una era de digital, apropiándose de la información con la tarea de convertirla en conocimiento, cabe mencionar los planteamientos de la Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura (2005) al trazar una ruta denominada Hacia las Sociedades del Conocimiento, haciendo clara distinción entre información y conocimiento.

Sin embargo, hay situaciones características de lo humano que exigen una perspectiva ética y la generación de una moral amparada en una legislación en defensa permanente de lo humano, diálogos abiertos en defensa de lo natural, especialmente del significado de *physis* en torno a lo humano desde el principio de identidad que hace cuestionar las propuestas de los grupos de ideología de género, el transhumanismo pensamientos contrarios al significado de plenitud humana.

Por otra parte, no es posible dejar a un lado las advertencias de Trías (2000), estableciendo una perspectiva ética:

La naturaleza es el ámbito que el hombre debe abandonar, o del cual ha de enajenarse de su originaria dependencia respecto a ella; el arcano metafísico (o el *cerco hermético*) constituye aquella *referencia* de allende el límite que el hombre debe respetar, aunque

evitando traerlo hacia sí, hacia el mundo de vida existente; y evitando así mismo la ocupación (siempre irreal) de ese espacio *metalingüístico* que debe ser mantenido y preservado en su carácter de arcano y misterio (p. 65).

Al mencionar del mismo autor, se genera una especie de límite, el cual debe generar un equilibrio y respeto entre lo racional, lo natural y aspectos que trasciende tanto a la razón como a la naturaleza, el *humanus* (Morales, 2000), es una síntesis significativa de encuentro entre lo físico y lo metafísico y por ello entre razón, fantasía, imaginación, utopía y esperanza. Para algunos autores como Teilhard de Chardin (1974, 1962), Zubiri (1982), lo antropológico es un tema permanente lleno de complejidad, pero que conducen a la sencillez de comprender el sentido de lo humano como elemento fundamental de la naturaleza y del sentido que se dé a la existencia, especialmente con aspectos de trascendencia.

Por ello, no es eludible el debate ético permanente sobre las tecnologías, especialmente la IA con uso y aplicación en la vida, cotidianidad y existencia humana.

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Professional training of future specialists in physical culture and sports in the information society

Formación profesional de los futuros especialistas en cultura física y deporte en la sociedad de la información

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Abstract

The theoretical foundations of the professional training of future physical culture and sports specialists by the global challenges of the information society have been clarified. It has been proven that thanks to information technologies it is possible to search for quick information; organization of quasi-professional interaction on virtual platforms; in athletes, based on the results of tracking their physical characteristics, the analysis of empirical data is automated; the use of specialized software, technologies for working out a certain type of motor skills, techniques, physiological changes in the body of a person, in social networks, chats, etc., for the visualization of individual sports movements. The impossibility of quality training of

future specialists in physical culture and sports without the use of digital technologies has been proven. The principles of self-organization of future specialists in physical culture and sports by the global challenges of the information society (generally pedagogical, specific) are defined. The leading principles and acmeculturological ones are singled out. A survey of future physical culture and sports specialists was conducted to clarify the main issues of their quality training.

Keywords: cultural physical, professional development, information, information technologies, training.

Resumen

Se han aclarado los fundamentos teóricos de la formación profesional de los futuros especialistas en cultura física y deporte de acuerdo con los retos globales de la sociedad de la información. Se ha comprobado que gracias a las tecnologías de la información es posible buscar información rápida; organización de interacciones cuasi-profesionales en plataformas virtuales; en deportistas, a partir de los resultados del seguimiento de sus características físicas, se automatiza el análisis de datos empíricos; el uso de software especializado, tecnologías para trabajar cierto tipo de habilidades motoras, técnicas, cambios fisiológicos en el cuerpo de una persona, en redes sociales, chats, etc., para la visualización de movimientos deportivos individuales. Queda demostrada la imposibilidad de una formación de calidad de los futuros especialistas en cultura física y deporte sin el uso de las tecnologías digitales. Se definen los principios de autoorganización de los futuros especialistas en cultura física y deporte de acuerdo con los retos globales de la sociedad de la información (generalmente pedagógicos, específicos). Se destacan los principios rectores y los culturoológicos cumbre. Se realizó una encuesta a los futuros especialistas en cultura física y deporte con el fin de aclarar las principales cuestiones de su formación de calidad.

Palabras clave: cultural física, formación profesional, información, tecnologías de la información, entrenamiento.

1. Introduction

The transition to the digital economy contributed to the deep and intensive penetration of information technologies into the educational process, which led to the new innovative development of higher education institutions and stricter requirements for professional training of future physical culture and sports specialists, their competence, by the global challenges of the information society. Effective tools are digital educational resources in those institutions of higher education that implement digitalization in their activities, simplifying tasks and personalizing the educational process. Outdated models of competencies of future specialists need reorientation and revision to the realities of the information society and global economy and therefore should be aimed at a competitive graduate, ready for the opportunities and challenges of digital transformation (Denysova, 2020). Therefore, the strategy and content of the professional activity of the teaching staff of higher education institutions depend on the socio-cultural conditions in which the system of educational tasks functions regarding the quality of professional training of a specialist at a specific stage of social development. In the system of higher education, the leading trends are determined, which in the training of specialists determine the need for qualitative changes and outline the requirements for professional training, future specialists in physical culture and sports, and the requirements for the personality of a teacher of a higher school today. The formation of a highly qualified future specialist in physical culture and sports, his creative personality, takes place on the condition that the future specialist is given opportunities for self-organization, self-realization, self-improvement, self-education, which takes place in the process of active educational and professional activity, taking into account the context of his future profession (Myronchuk, 2018).

It is the digitization and technologization of society that is important in the field of education because they provide new ideas about educational results that are impossible or difficult to achieve in the conditions of

ordinary, traditional education: emotional contact of students of education, real communication, use of material devices and objects.

The professional training of future specialists in physical education and sports, their acquisition of e-communication skills, digital skills, and mastery of information means of a specialized field is impossible without the organization of an electronic (virtual) information and educational space (Lazorenko, 2021).

2. Literature Review

O. Bida, O. Shevchenko, O. Syroezhko, K. Shovsh, & V. Vizaver (2023), the peculiarities of group interaction of students of education in team sports, the methodology and theory of organizing such interaction are revealed. The necessary ways of carrying out high-quality training of specialists and the organization of sports events are shown, which contributes to this position and instilling love for sports, increasing the level of physical development of the individual, improving the state of health, physical fitness, which has a clear tendency to constant deterioration. Examples of physical culture and sports activities that allow solving these issues are given. The types of communication (direct and indirect) that are necessary for the organization of group interaction of future specialists in team sports in the course of sports events during which the mental education of the participants of the educational process is carried out are revealed. The main functions of competition organizers, sports referees, teachers of physical culture and sports in team sports related to the organization and conduct of sports competitions are highlighted.

A scientific solution and theoretical generalization of the problem of professional training of future specialists in physical culture and sports by the global challenges of the information society, built on acmeculturological principles, was proposed to I. Ivani (2021). The developed system of professional training of future physical culture and sports specialists on the acmeculturological basis, which is represented by five structural blocks (theoretical-methodological, substantive, target, organizational-procedural, criteria-evaluative), was theoretically substantiated and experimentally verified. The synergistic relationship between the culturological approach and the acmeological approach as an effective basis for the professional training of future physical culture and sports specialists by the global challenges of the information society is shown, and the category "acme-cultural approach" is substantiated. The structure of the defined concept of "professional and pedagogical culture of a physical culture and sports specialist" is described. Pedagogical conditions for the professional training of future specialists in physical education and sports, built on acmeculturological principles, are proposed.

M. Danylevich (2018) revealed the methodical and theoretical foundations of the professional training of future specialists in physical education and sports for recreational activities. A system of such training of future specialists has been proposed, which includes a designed model, a developed concept, created educational and methodological support, and identified pedagogical conditions for such professional training. It is indicated that the system of professional training of future specialists in physical education and sports is a complex entity consisting of theoretical-methodological, target, organizational-technological, substantive, and criterion-evaluation blocks, which are shown in the model. Ensuring the implementation of the developed pedagogical conditions represents the effectiveness of the developed system of professional training for recreational and recreational activities of physical education and sports specialists: filling the content of training with professionally oriented disciplines, taking into account the specifics of recreational and recreational activities; ensuring the training of specialists with modern information and communication technologies, active methods in education, subject-subject interaction of education seekers and teachers; integration of practical, theoretical, research training of specialists in physical education and sports in the process of organization of research work and practical training of students.

S. Lazorenko (2021) proposed a solution to an important problem for future physical culture and sports specialists in the conditions of mixed education: the formation of information and digital culture. The

(practical and theoretical) principles of the formation of information and digital culture in the future specialist of physical culture and sports in the conditions of mixed education are substantiated. The concept of "informational and digital culture of the future physical culture and sports specialist" is revealed, and its main components (motivational, reflexive, axiological, cognitive, technological, communicative-suggestive) are distinguished. For future specialists in physical culture and sports, the author's system of formation of information and digital culture in the conditions of mixed learning is presented, which as a result ensures positive dynamics of the levels of formation of all components of the training of future specialists in physical culture and sports by the global challenges of the information society; is based on methodological approaches (technological, cultural, systemic, activity-based, BYOD-approach, student-centered, visual-digital); is subject to the following principles: the principles of creating digital educational resources, the use of blended learning; principles of professional training.

L. Denisova (2020) substantiated the methodological and theoretical principles of using information and communication technologies for the professional training of future masters of physical culture and sports. Developed a system of professional training using information and communication technologies for future masters of physical culture and sports and presented the author's concept of such training. Submitted the author's presentation of the concepts "professional training of future masters of physical culture and sports using information and communication technologies", and "readiness for professional activity of future masters of physical culture and sports, which is formed in institutions of higher education using information and communication technologies", "professional competence of masters of physical culture and sports, which is formed in institutions of higher education using information and communication technologies", "information and communication competence of masters of physical culture and sports" and "informational and educational environment of higher education of future masters of physical culture and sports".

O. Bida, O. Shevchenko, & O. Kuchai (2018) presented one of the promising areas of higher education development: the use of innovative technologies in physical education and sports, clarifying the meaning of the terms "innovation" and "pedagogical technology". They proved the need for the modern innovative society to introduce new technologies into education, which has theoretical and pragmatic significance because in the conditions of globalization, the historical development and perspectives associated with "high technologies" are of primary importance. They showed the peculiarities of improving the training of specialists in physical education and sports using innovative technologies, which were tentatively divided into groups, depending on the form of educational activity appropriate for their use. They characterized the technological criteria that are important in the development of innovative pedagogical technologies in physical education and sports at the current stage of education development (scientific; systematic; guaranteed; manageable; massive).

O. Bezcopylnyi (2020) developed and characterized the system of training for health-preserving activities in primary school for future physical education teachers. In the professional training of future teachers of physical culture, he revealed the theoretical foundations of health-preserving activities in primary schools. He presented the historical aspects and results of monitoring the professional training of future teachers of physical culture in primary schools for health-preserving activities. The practical training of future teachers of physical education in institutions of higher education: domestic and foreign was analyzed. Presented the model and developed the concept of the system of professional training of future teachers of physical culture in the primary school for health-preserving activities. Pedagogical conditions for the professional training of future physical education teachers have been identified and theoretically substantiated about health-preserving activities in primary schools.

The purpose of the article: is to find out the theoretical foundations of the professional training of future physical culture and sports specialists by the global challenges of the information society.

3. Methodology

To fulfill the research goal, theoretical methods of scientific research were used: analysis of philosophical, psychological and pedagogical, methodical literature and special specialized literature on physical culture and sports, teaching aids and textbooks; comparative analysis; retrospective analysis, study of prospective experience in practical activities in order to clarify the problem of the state of development of the quality of professional training of future physical culture and sports specialists in accordance with the global challenges of the information society in pedagogical practice and scientific literature of higher education institutions: foreign and domestic; structural and systemic analysis and abstraction to reveal the content of the structural components of readiness for professional training of future physical culture and sports specialists, which is formed using information and communication technologies in higher education institutions; synthesis and systematization for determining indicators, criteria and characteristics of levels of readiness for professional training of future specialists in physical culture and sports in accordance with the global challenges of the information society; design and generalization for the development of the content of professional training of future physical culture and sports specialists in accordance with the use of information and communication technologies; modeling for the purpose of developing a system of professional training of future physical culture and sports specialists using information and communication technologies; empirical – survey, pedagogical observation, expert evaluation, self-evaluation.

The leading idea of the study is that the professional training of future physical culture and sports specialists by the global challenges of the information society involves:

- provision of quality education for professional training of future physical culture and sports specialists;
- taking into account the positive gains of foreign experience in such training;
- availability of open access to information by the global challenges of the information society and its compliance with the educational, professional, and scientific needs of future physical culture and sports specialists;
- development of creative and intellectual abilities of future physical culture and sports specialists, increasing their desire for self-education throughout their lives;
- access of future specialists in physical culture and sports, engaged according to an individual schedule, to informational educational resources;
- orientation of future physical culture and sports specialists on the profile of future professional activity;
- performance of various types of work by online physical culture and sports applicants;
- implementation by teachers of online assessment of the results of independent work tasks by future physical culture and sports specialists;
- expansion of opportunities for scientific and pedagogical workers and students of physical culture and sports education in communications;
- active dissemination of web technologies, cloud technologies, remote technologies, and Smart technologies;
- the inclusion of network technologies and a large selection of educational software in the educational process.

The research is represented by the following concepts: methodological, theoretical, and methodical.

The methodological concept of the research is based on consideration of the professional training of future physical culture and sports specialists by the global challenges of the information society using information and communication technologies.

The following principles are involved: systematicity and consistency in education, scientificity, the connection of theory and practice, visibility, differentiation, individualization, variability of the subject

content of professional training, the collective nature of education in combination with the development of individual characteristics of the student of education, academic integrity.

The position of quality training of specialists is represented by methodological approaches: acmeological, qualitative, axiological, competence, systemic, and personally oriented.

The acmeological approach in the professional education of specialists in physical culture and sports affects the development of the creative personality of the student, uses and reveals the personal resources of the student, to stimulate the professional motivation of the future specialist to achieve the heights in professional activity.

The qualitative approach, through the use of information and communication technologies, manages to monitor the quality of the system of professional training of future specialists in physical culture and sports.

The axiological approach effectively forms the interests, motives, professionally important, and general value orientations of future specialists.

The competence approach directs the educational process in institutions of higher education to the formation of professional competence of future specialists in physical culture and sports with the use of information and communication technologies.

The systematic approach considers the professional training of future specialists in physical culture and sports by the global challenges of the information society, as a system with a multi-element structure consisting of tasks, goals, forms, methods, means, content, projected results of education of higher education seekers, methodical support.

A personally oriented approach creates the individualization of the process of professional training of future specialists in physical education and sports, the creation of a personal learning environment by the global challenges of the information society for the organization of the personal trajectory of acquiring knowledge by future specialists.

The theoretical concept of the research provides a substantiation of the research concepts of professional training of future physical culture and sports specialists by the global challenges of the information society. The technological concept of the study makes it possible to reveal the content of the components of readiness for professional activity of future specialists in physical culture and sports, which is formed with the use of information and communication technologies in institutions of higher education; helps to identify and theoretically substantiate the effective conditions of professional training of future physical culture and sports specialists by the global challenges of the information society; contributes to the development of the system of professional training of future physical culture and sports specialists by the global challenges of the information society.

The methodological concept of the study provides educational and methodological support for the professional training of future physical culture and sports specialists to the global challenges of the information society.

4. Results and Discussion.

Professional training of future specialists in physical culture and sports by the global challenges of the information society today is impossible without the use of digital technologies. Thanks to information technologies, it is possible to find quick information; organization of quasi-professional interaction on virtual platforms; in athletes, based on the results of tracking their physical characteristics, the analysis of empirical

data is automated; the use of specialized software, technologies for working out a certain type of motor skills, techniques, physiological changes in the body of a person, in social networks, chats, etc., for the visualization of individual sports movements.

According to the analysis of the features of professional training in the system of higher education of future specialists in physical culture and sports by the global challenges of the information society of the developed countries of the world, the strengthening of the information and digital component in it has been confirmed. By the global challenges of the information society, future physical culture and sports specialists must have a sufficient level of knowledge in the fields of physical culture and sports and information technologies and be prepared and aware of the use of information technologies in professional further activities, which will contribute to the formation of future physical culture and sports specialists of a new quality – at the same time a specific type of culture: digital and informational (Lazorenko, 2021).

Contextual training of future physical culture and sports specialists by the global challenges of the information society implements a productive learning strategy.

One of the main ways of implementing such training is the organization of the educational process in institutions of higher education based on the pedagogical co-creation of students and teachers. The subjective and objective factors of the implementation of high-quality pedagogical collaboration between students and teachers in the educational process include the following:

- optimal use of dialogic forms when teaching students of education;
- introduction of elements of creative training into the process of preparation;
- the use of a group form of training for education seekers;
- formation of motivation for co-creation in the subjects of interaction;
- based on creative educational and professional tasks, the problematic nature of the educational process;
- creation of mutual respect, a good-natured psychological atmosphere, and equality of participants in the educational process;
- focusing on the optimal self-realization of the education seeker, the mandatory use of pedagogical means of indirect management;
- the transformation of the teacher's position as a consultant, not a carrier of information, as well as an organizer of the educational process.

We will determine the principles of self-organization of future physical culture and sports specialists by the global challenges of the information society.

General pedagogical:

- subjectivity;
- humanistic orientation;
- integrity and continuity of the pedagogical process;
- social and personal development of the connection between theory and practice, etc.;

Specific:

- the principle of self-determination – self-determination of internal motivation in various situations of professional activity, own behavior, freedom;
- the principle of self-actualization of experience – quick self-organization for acquiring new knowledge, using the individual experience of the student of education;

- the principle of self-correction – awareness of one's own experience, overcoming the stereotypical understanding of oneself as a source of knowledge, feeling the specificity of the situation, establishing a dynamic balance of professional activity and one's personality;
- the principle of self-organization of time – planning ways to achieve one's own goals and realizing their necessity; rational distribution of time to overcome the daily routine and monotony of life for various activities;
- the principle of development of creative thinking – direct adoption of creative, non-standard decisions, creation of alternative ways in professional activity, overcoming uncertainty of situations (Myronchuk, 2018).

In addition to general didactic principles and specific principles of learning, we will highlight the leading principles of physical culture and sports:

- comprehensive, harmonious personality development;
- age adequacy of physical activity;
- health, therapeutic and adaptive orientation;
- a gradual increase in physical activity;
- alternation of load and rest;
- connection with life activities;
- systematicity;
- accessibility and individualization.

Let's consider acme-cultural principles:

- the principle of continuity of three levels of education: special (professional-pedagogical), general (general cultural), and individual development (personal), which makes the logic of mastering the content of education and the connection between the stages of becoming a future specialist accessible. The principle from the level of the consumer of education services to the level of creating acme-cultural values of society and the individual creates conditions for the development of the activity of the subject of cognitive activity.
- the principle of integration of all the essential forces of a specialist and the integrity of his formation, which are manifested in intellectual, motivational, bodily-motor, emotional, and moral aspects. With this approach, integrity, self-improvement, and creative self-realization act as a factor in the comprehensive development of the individual.
- the principle of personality formation in a variety of activities acts as the main element of professional and pedagogical training of physical culture and sports specialists by the global challenges of the information society on an acmeculturological basis. The essence is that in the process of professional training, students should be included in various types of activities, taking into account that the basis of the comprehensive harmonious development of the personality needs (primarily spiritual, professional, cultural).
- the principle of professional and pedagogical orientation, takes into account the need for the formation of skills, abilities, and knowledge that will be necessary in future professional activity.
- the principle of the unity of theory and practice carries out an integrative combination of practical and theoretical activities, which enables the transition to a qualitative awareness of the connections between professional experience and successful professional self-realization from the quantitative accumulation of pedagogical and sports experience.
- the principle of pedagogical reflection helps to identify the student's behavior and the meaning of professional actions, directs activity to knowledge, and enables the elimination of motivational and value contradictions, the analysis by the student of the phenomena of his activity and consciousness, directs

the individual to build a positive life and professional perspective, to the formation of the future professional and pedagogical activities and meanings of life.

- the principle of social conditionality determines the formation of the professional and pedagogical culture of the student through the socio-cultural processes that take place in society, expresses the personal image of the future specialist in physical culture and sports by the global challenges of the information society and cultivates his success (Ivanii, 2021).

The functions of competition organizers, sports doctors, teachers of physical culture and sports, and sports referees are related to the holding of sports competitions and their organization and vary depending on the nature of these people's activities. Preparing children for participation in sports competitions is one of the most important functions of physical education and sports teachers (Kuchai, 2013).

The main document that regulates and influences the results of the competition is the rules of the competition for a certain type of sport. They regulate the actions of participants, judges and provide the conditions for identifying the winners, contain a list of prohibited actions, and determine the norms of athlete behavior (Kuchai & Kuchai, 2019).

Competitions and game sports start in primary school and are of great importance for a child's health (Akseonova et al., 2020).

The basis of the educational process is information resources, which is a necessary and important condition for the quality training of future physical culture and sports specialists by the global challenges of the information society. Electronic information resources are effective when used in education, for their use devices are necessary: electronic (computer), with the aim of transformation into electronic educational resources. Today, electronic educational resources are the main component of the information content of the educational process, they are used as a means of learning, for the development of reference materials, for educational and methodological support, in scientific research, etc. (Varzar, 2013).

Therefore, the professional training of future specialists in physical culture and sports by the global challenges of the information society with the use of information and communication technologies is considered an educational process that integrates technical and software means of processing and distributing information, collecting information, and allows future specialists to effectively implement professional functions with the aim of physical improvement, increasing intellectual and physical activity of people and achieving higher sports results (Denysova, 2020).

High-quality higher education, in today's conditions, is impossible without the global use of electronic educational resources and information and communication technologies, therefore, for the qualitative training of future specialists in physical culture and sports by the global challenges of the information society, the use of electronic educational resources in the training of future specialists in institutions of higher education (Shchyrbul et al., 2022).

We will single out the main types of electronic educational resources necessary for quality training of future specialists in physical culture and sports by the global challenges of the information society:

- virtual educational resources – (existing based on cloud technologies), characterized by the speed of processes, scale, and the possibility of performing clear actions that are impossible in the real world.
- textographic (presentation of material on a computer screen), according to the same principle as in a regular book, the author sets the sequence of the material – this type of electronic educational resource does not have significant differences from the polygraphic version, it can be translated and printed in paper form of the educational material.

- multimedia resources (created on video materials): contain animation, sound, illustrations, texts, videos, and other possibilities of digital technologies.
- hypertext (built using hypertext technology). Allows viewing in an arbitrary order of text fragments defined by a hypertext link. Terms, facts, and concepts can be referenced in electronic educational resources of this type, they provide an opportunity under the conditions of choosing a keyword (or word combination) to obtain qualitative information for clarification (Lytvynova, 2011).

We will reveal the advantages of using electronic educational resources for high-quality training of future specialists in physical culture and sports by the global challenges of the information society:

- combined content and simultaneous impact on various organs of information perception.
- an opportunity for the student to study the presented material independently at a convenient time.
- transmission of information in various ways.
- the possibility to simulate various pedagogical situations and processes.
- formation of innovative thinking and activation of cognitive activity.
- the possibility to distribute information via the Internet.
- Interactivity.
- possibility to supplement educational courses with new data.
- convenience and wide possibilities of searching for information.
- convenience, simplicity, and reliability of information storage.

The integration of modern information and communication technologies into the educational process provides opportunities for the implementation of new ideas in the field of education, in particular for the implementation of various forms of electronic learning (distance learning and mixed) (Kravchenko et al., 2022).

The main technological base, which widely uses the technology of mixed learning in the practice of training future specialists in physical culture and sports to the global challenges of the information society, gives primary importance to the modern learning management system Learning Management Systems (LMSs) and based on organizational measures and training methods, Internet technologies, which allow to implement various types of electronic forms of education, are a complex of software and technical means.

Cloud services are an ideal platform for automating the training of future specialists in physical education and sports by the global challenges of the information society, as they allow many students to collaborate at the same time and do not require the purchase of hardware. When using information and communication technologies during the training of future specialists in physical culture and sports, there is a problem of providing information support, choosing the optimal way of organizing the educational process, and mastering educational disciplines with the rational use of information and communication technologies in the educational process with students taking into account the specifics of the specialty of physical culture and sports. An example of an open service, such as a platform where a teacher can create his unique educational course, can be the Google service for educational institutions (G Suite for Education). This software service is provided free of charge to public institutions as a "Software as a Service" through an accessible Internet browser.

Let's emphasize that digital technologies cannot completely replace real communication with the teacher and the classroom's traditional form of the educational process in all academic disciplines (Bezcopylnyi, 2020).

Modern information and communication technologies: web conferences, and webinars, provide the opportunity to remotely participate in symposia, scientific and practical conferences, debates, etc. to scientific and pedagogical workers; via e-mail: cooperation with other institutions of higher education takes place, collections of scientific papers are sent, invitations are sent to publicize the results of scientific research, and materials of conference results are also stored, cooperation with sports federations takes place. Scientific and pedagogical workers, students of education, that is, future specialists in physical education and sports by the

global challenges of the information society, actively interact with the help of social networks, which simplifies the process of information exchange between the participants of the educational process.

Active in the means of information exchange are services such as the Facebook social network, which is a tool for student youth to cooperate with academic supervisors, research advisors, and participants in educational activities.

Through social networks, information is provided about planned scientific conferences, projects, and debates, which makes communication more accessible and allows for the process of integration between interested persons who are representatives of other higher education institutions.

The use of special programs in the research environment provides an opportunity to hold audio and video conferences, communicate in real-time, transfer text, files, and images. With the help of Viber, a special messenger, future specialists in physical culture and sports by the global challenges of the information society can quickly receive advice on important educational issues.

Online services have significant potential for improving the system of training future physical culture and sports specialists, respectively. The most popular are Office Online, Google Docs, Teamlab Office, Zoho Docs, iWork, ThinkFree, QuickOffice, Gliffy, Documents To Go, Dropbox, DocMe, Microsoft OneDrive, and Google Drive.

The vast majority of interviewed future specialists in physical culture and sports, in particular, possess:

78.1 % of the skills and abilities to search for information of an educational, professional, and scientific nature to navigate the Internet;

77.04 % with the knowledge to ensure in the field of physical culture and sports scientific and research activities through automated

75.97 % skills and abilities of free work in user mode on a modern personal computer; information and search systems;

75.18 % with the skills and abilities to process informational material using the services of the global Internet network;

71.05 % knowledge of the principles of personal computers, the conceptual apparatus of computer technology;

71.08 % are good or fluent in general-purpose software (Microsoft Office tools, in particular, MS Excel, MS Word, MS Access, and MS PowerPoint);

25.89 % knowledge for the effective solution of tasks of scientific activity in the field of physical culture and sports about information resources of electronic databases of scientific periodicals;

25.38 % knowledge about the use of modern information technologies and their promising directions for solving effective tasks of professional activity;

24.87 % of skills and abilities to fill web pages with informational, professional material in the field of physical culture and sports to use the hypertext markup language of HTML documents;

24.27 % with knowledge of modern global computer networks;

24.39 % skills and abilities to work with graphic information processing software packages;

24.33 % are good or fluent in Internet services (WWW network service, e-mail, webinars, web conferences, etc.);

23.95 % have skills and abilities based on cloud computing to apply modern computer technologies to solve professional tasks;

23.60 % with knowledge of computer network services;

18.41 % skills and abilities to organize methodical and informational materials and regulatory documents.

According to the priority of the use of communication and information technologies, cloud computing technologies took the first place; in second place, virtual educational environments Google Classroom, Moodle, etc.; in third place, messengers, e-mail, webinars, WWW network service, etc. – Internet services; in fourth place, graphic information processing programs, Microsoft Office tools, etc. – general and special purpose software; in fifth place, Hangouts, Zoom, Skype, etc. – video communication technologies; in sixth place, programs for recording video from monitor screens, video editing programs, etc. – technologies for creating multimedia projects (Plakhotnik et al., 2023).

The use of cloud technologies makes it possible to optimize the process of training future specialists in physical culture and sports by the global challenges of the information society, to simplify the process of monitoring the quality of the results of educational activities of education seekers, and to create conditions for self-evaluation of learning results, which are necessary for effective professional future activities in the field of physical culture and sport (Denysova, 2020).

The task of teachers of higher education institutions is to choose such technologies that would allow every future physical culture and sports specialist to show creativity and activity. That is, along with traditional education, multimedia technologies take place (Plakhotnik et al., 2022). The tools of multimedia technologies, which are necessary today, are of great importance in the high-quality training of specialists. New information technology, multimedia, helps to achieve the set goal of quality education and represents a set of methods of production, techniques, methods of processing, storage, and transmission of audiovisual information (Shevchenko et al., 2022).

With the help of multimedia technologies, the professional thinking of specialists is formed, and this is important because often students cannot make independent decisions, it is difficult for them to predict the possible results of interaction with the team, express independent judgments, deviate from the proposed model in certain pedagogical situations (Veseliivskyi et al., 2015).

The reform of education in the world considers it necessary to use multimedia technologies in physical education and sports and is one of the promising directions of the world development of education (Dychkivska, 2004).

To meet the modern requirements of employers for physical culture and sports specialists by the global challenges of the information society, a new approach is needed as a personality of a new formation, to a mobile, physically prepared, professional-cultural, creative, morally mature, competitive professional, ready in the conditions of modern socio-cultural realities to active life. Therefore, the training of physical culture and sports specialists, taking into account the global challenges of the information society, is necessary today (Bida et al., 2018).

5. Conclusions

The theoretical foundations of the professional training of future physical culture and sports specialists by the global challenges of the information society have been clarified.

The professional training of future specialists in physical culture and sports by the global challenges of the information society with the use of information and communication technologies is considered an educational process that integrates technical and software means of processing and disseminating information, collecting information, and allowing future specialists to effectively implement professional functions for physical improvement, increasing intellectual and physical activity of people and achieving higher sports results.

Thanks to information technologies, it is possible to find quick information; organization of quasi-professional interaction on virtual platforms; in athletes, based on the results of tracking their physical characteristics, the analysis of empirical data is automated; the use of specialized software, technologies for working out a certain type of motor skills, techniques, physiological changes in the body of a person, in social networks, chats, etc., for the visualization of individual sports movements. The impossibility of training future specialists in physical culture and sports without the use of digital technologies has been proven.

The main ways of implementing high-quality training of specialists are shown, in particular, the organization of the educational process in institutions of higher education based on the pedagogical co-creation of students and teachers. Subjective and objective factors of the implementation of high-quality pedagogical cooperation of students and teachers in the educational process are singled out.

The principles of self-organization of future specialists in physical culture and sports by the global challenges of the information society (generally pedagogical, specific) are defined. The leading principles of physical culture and sports are highlighted. Acmeкультурological principles are considered.

A survey of future physical culture and sports specialists was conducted to clarify the main issues of their quality training.

The main types of electronic educational resources necessary for the high-quality training of future specialists in physical culture and sports by the global challenges of the information society are highlighted. The advantages of using electronic educational resources for quality training of future physical culture and sports specialists are revealed.

The integration of modern information and communication technologies into the educational process provides opportunities for the implementation of new ideas in the field of education, in particular for the implementation of various forms of electronic learning (distance learning and mixed). Cloud services are recognized as an ideal platform for automating the training of future physical culture and sports specialists by the global challenges of the information society, as they allow a large number of students to collaborate simultaneously and do not require the purchase of hardware.

The issue of the implementation of the professional functions of future specialists in physical culture and sports with the aim of physical improvement of the personality, increasing the intellectual and physical activity of people, and achieving high sports results needs to be further investigated.

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Foreign experience in quality assurance within the innovative space of higher education

Experiencia extranjera en aseguramiento de la calidad dentro del espacio innovador de la educación superior


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Abstract

The effectiveness of the quality assurance system for higher education has been shown at the international level. The relevance of the problem of quality assurance in the innovative space of higher education is considered, first of all, in the context of the global space of higher education. Reforms in the operational and strategic management of education led to the introduction of recommendations and standards for quality assurance in the ESG European Higher Education Area. The main factors of quality assurance in the innovative space of higher education and the main principles of reforming the European space of higher education are highlighted. An effective tool for ensuring the quality of higher education is academic integrity, which is recognized as the moral code and ethical rules of the educational, scientific, and civilized

community. Based on the results of the project "Impact of Policies for Plagiarism in Higher Education Across Europe" in 27 EU member states, the systems and methods of combating plagiarism were analyzed and recommendations were made regarding the need to popularize the institutional culture of academic integrity.

Keywords: quality, higher education, foreign, innovation, academic integrity.

Resumen

A nivel internacional se ha demostrado la efectividad del sistema de aseguramiento de la calidad de la educación superior. La relevancia del problema del aseguramiento de la calidad en el espacio innovador de la educación superior se considera, en el contexto del espacio global de la educación superior. Las reformas en la gestión operativa y estratégica de la educación llevaron a la introducción de recomendaciones y estándares para el aseguramiento de la calidad en el Espacio Europeo de Educación Superior ESG. Se destacan los principales factores de garantía de calidad en el espacio innovador de la educación superior, los principios fundamentales de la reforma del espacio europeo de educación superior. Una herramienta eficaz para garantizar la calidad de la educación superior es la integridad académica, reconocida como el código moral y las reglas éticas de la comunidad educativa, científica y civilizada. De acuerdo con los resultados del proyecto "Impacto de las Políticas para el Plagio en la Educación Superior en Europa" en 27 estados miembros de la CE, se analizaron los sistemas y métodos de lucha contra el plagio y se hicieron recomendaciones sobre la necesidad de popularizar la cultura institucional de integridad académica.

Palabras clave: calidad, educación superior, extranjero, innovación, integridad académica.

1. Introduction

Ensuring quality in the innovative space of higher education for all citizens is the main thing for creating a fair and high-quality society dreamed of by mankind, which is a kind of signpost for the development of our civilization. Quality education changes a person, the surrounding reality, his worldview, and the future. The course of the historical civilizational development of the world with the improvement of the innovative space of higher education led to the transition to the information society from the industrial one. In such a society, information has the highest value, and the source of innovative information in developed countries of the world reaches 80% of national wealth. With this approach, the main task of state importance becomes the perspective of education in the country and ensuring the high quality of the educational space (Vasyliuk et al., 2019).

Today, the educational community at the international level believes that there cannot and should not be a clearly defined international effective system of ensuring quality assurance for higher education. Each civilized country solves the issue of quality assurance in the innovative space of higher education, taking into account the peculiarities of the national education system. But in no case should we bypass pan-European and world experience in ensuring the quality of higher education, but rather unite with existing institutions as soon as possible (Reznichenko, 2020).

2. Literature Review

O. Finahina, I. Bitiuk, O. Matviienko, & D. Hudyma (2022) showed the need in the conditions of the information economy to update the principles of the development of innovative educational space based on comprehensive European experience and creativity and provided a scientific justification. With a projection on social transformations in society, the processes of development of the educational space, a theoretical reflection of research on the information economy and information society is presented in a categorical vision. Systematized modern theories of the information society of outstanding world scientists,

which in the directions of economic and social progress shape the future picture of the world, accumulate, and change the modern world. The role in the educational space of the basic manifestation of changes is revealed, and the principles of the development of the educational system, which ensures the formation of technologies, several management mechanisms, and the movement towards the information economy, are recognized. The principles of the development of the educational process are presented as integrated, targeted approaches that ensure vectorial movement of the educational system, actualization, and give significance to the development model of education management and the economy of society. The European experience of the development of the educational space as an increase in the potential of the information economy and a key asset of humanity is systematized.

S. Kalashnikova, N. Bazeliuk, & O. Bazeliuk (2023) devoted their research to one of the priorities of the development of the European area of higher education: the improvement of teaching in the field of higher education. This direction is relevant for higher education in all countries. The practical orientation of scientific institutions and institutions of higher education is presented; the prerequisites of the political and theoretical foundations of the implementation of the improvement of learning and teaching in universities are summarized; the role of international projects implemented in the world, directions of scientists who take care of this issue are shown; methodical recommendations were developed for the creation of strategies, institutional models, solutions, approaches for scientific institutions and universities to improve the quality of teaching and learning.

S. Sysoieva, N. Batechko, & I. Tryhub (2020) developed, to ensure the practical and theoretical training of future doctors of philosophy (Ph.D.), methodological guidelines for higher education holders of the degree "Doctor of Philosophy" for the educational module "Quality of higher education and expert support for its provision: the experience of the European Union" within the framework of the "Erasmus +: Jean Monnet" program regarding expert support of higher education and ensuring the quality of higher education in Ukraine, taking into account the experience and best achievements of the countries of the European Union. V. Kuharskyi, O. Osredchuk, & M. Mazurkevych (2018) showed the main best practices and innovative principles of higher education institutions in Europe; analyzed the processes of formation of higher education quality assurance systems in the European space, analyzed the regulatory and legal framework for quality assurance of education in Ukraine. Procedures and criteria for external assurance of education quality are outlined; features of higher education quality assurance systems in universities, the most popular models in higher education institutions, and their internal quality assurance systems are shown. Methodological recommendations are provided for the procedure of evaluating educational programs for agencies of quality assurance of education, development of higher education institutions, and construction of educational models of quality assurance systems.

O. Lokshyna (2018) revealed the peculiarities of the European progress of higher education. She characterized the essence of the Europeanization of higher education, showed the European guidelines for the development of higher education in the European space of higher education, and justified the challenges that are on the way to the synchronization of the system of ensuring the quality of higher education with European standards. Revealed the content of the Standards and recommendations for quality assurance in the European area of higher education.

V. Reznichenko (2020) examined and clarified the features of the modern European experience in providing higher education. From the past to the present, the possibilities of his best possessions are shown. The peculiarities of the European experience of providing higher education are substantiated and the problems of the European experience of providing higher education are investigated, the peculiarities of the application of the best traditions in the educational sphere are determined. The full conformity of the education of the EU countries with European values is shown, the worldview issues of citizens, important educational aspects of education reform, and the formation of views on education of the "new mentality" are clarified. The need to take national specifics into account is emphasized.

A. Vasyliuk, M. Dei, & V. Bazeliuk (2019) revealed the essence of the concepts: ensuring the quality of education, innovation space, proposed criteria, factors, indicators, indicators, and components of the quality of higher education. In the international context, the issue of the quality of higher education is highlighted. Attention is paid to monitoring the quality of student education and evaluating the quality of higher education in general, which is focused on the analysis of the mechanisms of ensuring.

The purpose of the article: at the international level, to show the effectiveness of the quality assurance system for higher education.

3. Methodology

To achieve the goal of the research, the following theoretical research methods were used:

- analysis of psychological-pedagogical, scientific, philosophical, reference, and methodical literature on the research topic;
- comparison and comparison to substantiate the European experience of quality assurance in the innovative space of higher education and to highlight the progressive trends of quality professional training of future specialists in foreign countries;
- synthesis, and systematization, which made it possible to characterize the state of development, and scientific provisions of the researched problem, allowed to substantiate the categorical and conceptual apparatus of research;
- specification, and abstraction for the development of the content of an effective quality guarantee system for higher education;
- modeling for the development of proposals for quality assurance in the innovative space of higher education;
- generalization for ascertaining the results of research work, educational forecasting, and formulation of conclusions.

The research is based on the starting points of an educational nature: innovation, humanitarianization, humanization, informatization, and continuity, which is the main thing in higher education institutions with intensive changes in the sociocultural space, increasing the quality of the educational process, modernization of higher education in the context of European integration processes. The implementation of scientific research on quality assurance in the innovative space of higher education covers interrelated concepts: methodological, theoretical, technological, and methodological.

The methodological concept reflects the interaction of general scientific methodology approaches to the study of the specified problem, namely:

- synergistic, based on the assimilation of a synergistic picture of the world in the process of ensuring quality in the innovative space of higher education; allows considering this process as a self-developing, complex, innovative system;
- systemic, which determines the comprehensiveness of the analysis of the problem; ensures the structuring of quality assurance in the innovative space of higher education, as well as its purposefulness, integrity, and effectiveness;
- personally oriented, the dominant personality of which is the personality of the student of education;
- axiological, which gives reasons to understand quality assurance in the innovative space of higher education as a professional value that expresses a subjective attitude to professional activity;
- cultural, which provides an opportunity for the student to feel himself as a subject of quality assurance in the innovative space of higher education;
- interdisciplinary, which contributes to the integrity of the training of future specialists by ensuring quality in the innovative space of higher education;

- competence-based, oriented towards the formation of a system of knowledge in future specialists, as a basis for the successful implementation of professional activities;
- technological, which involves instrumental management of the educational process to train a high-quality, competitive specialist.

The theoretical concept includes a system of key definitions, leading approaches, and ideas that enable the interpretation of the main categories and concepts of research.

The technological and methodological concept is implemented through the development and implementation of a quality assurance system in the innovative space of higher education, aimed at achieving positive dynamics of the research process.

4. Results and Discussion

About two decades for the development of the European area of higher education are considered the basis for ensuring the quality of higher education based on ESG recommendations and European standards. In the European space, the adoption of ESG became the determining factor of changes in ensuring the quality of education. This approach provided the basis for the creation and introduction of a register of independent quality assurance agencies. The Bucharest Communiqué of 2012 allowed all agencies registered in EQAR (European Quality Assurance Register for Higher Education) to carry out their activities in the entire European space in compliance with national requirements. In the development of the quality of higher education, the main aspects are student-centered learning, the involvement of employers in the educational process, the expansion of groups of interested parties, the use of modern information and communication technologies in education, etc. (Kuharskyi et al., 2018).

The first attempt to develop the concept of quality assurance in the innovative space of higher education belongs to the developers of the World Declaration adopted in October 1998 at the initiative of UNESCO on higher education for the 21st century. In this document, quality assurance in the innovative space of higher education appeared as a multidimensional strategy that covers all its activities and functions: scientific research and scholarships, educational programs, education seekers, staffing, buildings, equipment, material and technical base, academic environment (Neave, 1998). Quality improvement was proposed to be achieved by taking into account the conditions and realities of the organization of the educational process, harmonizing the internal self-evaluation of higher education institutions with expert external evaluation, and involving interested parties in institutional evaluation (Vasyliuk et al., 2019).

The main indicator of the level of trust in educational institutions is the quality of higher education and the compatibility of the national education systems of different countries (Polishchuk et al., 2022).

Quality assurance in the innovative space of higher education covers the following aspects:

- the organization of the educational process, adequate to modern trends in the development of the world higher national and school and the level of development of society;
 - availability of trained scientific and pedagogical personnel of a high-quality qualification level, as well as educational and methodological, material, financial, informational, and other resources;
 - development of clear requirements for the contingent of education seekers, and their practical implementation during admission to study;
 - implementation and development of new educational innovative technologies;
 - definition of parameters and conditions of the system of certification of education seekers;
 - monitoring the quality of training of specialists and educational activities at all stages of educational activities and at all levels of the higher education institution, the state, and the international level.
- Therefore, the relevance of the problem of quality assurance in the innovative space of higher education

should be considered, first of all, in the context of the pan-European space of higher education (Babyn, 2004).

We will show the complex of components that includes the quality of higher education:

- the quality of the teaching staff.
- the quality of the educational and methodological base (attraction to the education process of innovative means and methods of cognition, resource provision of higher education institutions, modern technical capabilities).
- quality of training of students who possess technologies within their specialty is capable of adapting to the conditions of scientific and technical progress, effective competitive professional activity, and have the skills to use their knowledge to solve professional tasks (Vasyliuk et al., 2019).

The standards and recommendations for quality assurance in the innovative space of higher education primarily support the spirit of the "Greek Declaration of July 2003" (European University Association, 2003), which was proclaimed by the European Association of Universities, which states that "the goal of the European dimension in the field of quality assurance is the affirmation of mutual trust and the provision of greater transparency in the context of the diversity of national systems and subject areas." Priority is given to national systems of higher education, the importance of the autonomy of higher education institutions, and the need for agencies to ensure the quality of education are emphasized, and specific requirements for academic disciplines are outlined. The main responsibility for ensuring quality in the innovative space of higher education, by the principle of institutional autonomy, lies with each institution, which forms the basis for the systematic accountability of the academic system within the national system of ensuring the quality of education (Karpenko, 2012). Therefore, standards and recommendations for quality assurance in higher education are aimed at finding a permanent balance between the role that external quality assurance procedures can play in the innovative space of higher education and the development of an internal culture of quality compliance (Reznichenko, 2020).

The need for reforms in the operational and strategic management of education presupposes the introduction of recommendations and standards for quality assurance in the ESG European Higher Education Area. As a result of the study of feedback on the quality of education from students, improvement of the excellence of education programs in higher education, competence planning, analysis of the demand for education, forecasting of education results, stakeholders are involved, resistance to the introduction of new priorities is overcome, and student-centered education is introduced (Kuharskyi et al., 2018).

Standards and recommendations for quality assurance in the European area of higher education have become a powerful supranational tool for ensuring the quality of higher education, which strengthens the Europeanization of higher education (Shchyrbul et al., 2022).

Standards for quality assurance in the innovative space of higher education are divided into three parts:

- education quality assurance agencies;
- external assurance of the quality of education;
- internal assurance of the quality of education (Lokshyna, 2018).

Let's highlight the main factors of ensuring quality assurance in the innovative space of higher education.

1. Attitude towards higher education as a competitive position in society, the prestige of the higher education institution, national security, the highest value of the individual, the guarantee of social progress, the competitiveness of the state, and the individual.

2. Constant informing of education seekers, educational activities about the strategy of ensuring the quality of education, measures, and joint tasks to improve the efficiency of the educational process, the position of the public, employers, higher education institutions, and other interested parties.
3. Adequate financing of higher education institutions, adequate remuneration for the work of professors and teaching staff, which ensures the quality of teaching, and realizes educational goals.
4. Intolerance of any forms of academic dishonesty: plagiarism, compilation, falsification, mandatory punishment for various manifestations of academic dishonesty, and implementation of a nationwide anti-plagiarism system for officials and civil servants of all ranks, teachers, heads of higher education institutions, higher education students, scientists.
5. Responsibility for the results of educational activities of stakeholders: making management decisions, teaching, training, and organization of professional training.
6. Transparency of measures and mechanisms to ensure quality assurance in the innovative space of higher education, open access to information of institutions of higher education, scientific institutions, about the activities of relevant management bodies, related to the improvement of internal and external quality assurance systems of the educational space.
7. Monitoring the effectiveness of internal and external quality assurance systems in the innovative space of higher education by society, the state, public independent agencies, and organizations (Vasyliuk et al., 2019).

An effective tool for ensuring the quality of higher education is academic integrity, which is recognized as the moral code and ethical rules of the educational, scientific, and civilized community. Academic integrity is a complex concept that describes a kind of contract between members and their academic community: management by teachers and students.

The main signs of academic integrity include:

- cooperation of all participants in the educational process: students of education, their parents; pedagogical, scientific, scientific-pedagogical workers; other persons participating in the educational process by the procedure established by the institution of higher education (presence of a special subject);
- a combination of legal and moral principles existing in a set of rules and ethical principles defined by law (complexity);
- application of academic integrity in the process of teaching, learning, and scientific activity (specified scope of application);
- ensuring trust in the results of scientific achievements and training (special purpose) (Tytska, 2018).

According to the results of the project "Impact of Policies for Plagiarism in Higher Education Across Europe" in 27 EU member states, the systems and methods of combating plagiarism were analyzed and recommendations were made regarding the need to popularize the institutional culture of academic integrity:

1. Academic integrity should be a strategic priority in the management system of a scientific institution or institution of higher education.
2. Clear, consistent, and transparent adherence to institutional-wide procedures and rules to maintain academic integrity.
3. Application of proportionate and fair sanctions.
4. Interaction of the entire academic community and joint efforts in the implementation of the strategy of combating and preventing manifestations of academic dishonesty.
5. Values for encouragement and obtaining additional financial grants or bonuses, institutional culture, and the cult of learning.
6. Leadership of education seekers in active support of academic honesty, its institutional strategy.
7. Openness, transparency, effective communication at all levels of education, preservation of institutional culture.

8. Monitoring of education, constant assessment of education seekers, research aimed at improving the effectiveness of the strategy of the educational space and the education system.
9. Implementation of the principles of academic integrity in the system of scientific development and research within and outside the institution.
10. Institutional understanding, by international norms and standards, of what is acceptable in academic practice (Glendinning, 2015).
11. Coordination of a set of criteria at the international level, which should take into account the characteristics of an effective system and policy to ensure academic integrity in institutions of higher education.
12. To assess the effectiveness of the institutional policy of academic integrity, the development of an online platform based on defined criteria.
13. Provision of financial and practical support from EU institutions responsible for education and authorities (regional, national) for the development of effective institutional policies.
14. Formation of a culture of academic integrity at all levels of education through the implementation of innovative measures, as well as a targeted international program of conferences and seminars.
15. Stimulation by organizations responsible for the control and quality assurance of higher education, attestation, and accreditation, licensing of systematic monitoring of academic integrity.
16. At all levels of training, based on the norms of academic ethics, best practice, integrity, and truth, ensuring the appropriate level of education for those seeking education.
17. Creation of a program to increase scientific research and awareness of education seekers through the formation of a European network of scientists contributing to the promotion of best practices in the field of academic integrity (Dehtiarova, 2016).

We see that an important factor in the success of higher education institutions is academic integrity. The trust of sponsors, employers, teachers, customers of scientific and educational services, and grant givers is based on it. Thanks to academic integrity, feedback is formed, which is positive and strengthens the reputation of the institution of higher education, its students, and its employees (Vasyliuk et al., 2019).

We will consider the peculiarities of prioritization and actualization of the improvement of the quality assurance process in the innovative space of higher education, teaching in higher education in national cases.

Austria. According to the Federal Ministry of Science, Research and Economy in higher education in Austria, the task of improving teaching is determined by the following procedures and documents:

1. The National Universities Development Plan has been in effect since 2016, to improve the relevant indicators and quality of teaching in higher education regarding the learning outcomes of higher education applicants.
2. A component of the system of external quality assurance in the innovative space of higher education is ensuring and improving the quality of teaching.
3. The educational process in Austrian universities is not regulated at the national level but belongs to the autonomy of universities. Therefore, the issue of ensuring the quality of higher education is reflected indirectly in the framework of the performance agreement, which is signed by the Ministry of Education, Science and Research and higher education institutions. According to this agreement, state universities are responsible for the quality of education and teaching.

Netherlands. At the national level, the document "The Value of Knowledge, Strategic Agenda for Higher Education and Research 2015-2025" is in force, which defines the main goals of the strategic development of higher education institutions: access to education, world-class higher education, development of young talents, diversity of teaching methods and social activity. The successful implementation of the quality assurance process in the innovative space of higher education depends on such strategic goals. The main mechanisms and tools of the process of ensuring the quality of higher education are digitalization of the

educational process, professional development of teachers, etc. The Association of Universities of the Netherlands is coordinating the implementation of the paradigm of improving the quality of higher education in the country.

Ireland. In the country, attention is focused on improving learning and teaching in higher education:

1. In Ireland, the Strategic Innovation Fund (SIF) was created, which supports projects to improve learning and teaching in higher education (the early 2000s).
2. The National Forum for the Enhancement of Teaching and Learning was created in the country, which directs all the efforts of universities to the improvement of teaching and learning (it offers a road map for the digitalization of higher education, presents the National Framework for the professional development of academic staff of higher education institutions and offers several innovative initiatives (end 2012).
3. The introduction of the National Learning Impact Awards promotes the recognition and wide sharing of best practices in higher education: teaching and learning.

Norway. In January 2017, the Ministry of Education and Research issued the document "Quality Culture in Higher Education", which spells out public expectations and defines tasks for improving the process of quality assurance in the innovative space of higher education, namely the government:

1. Demands from institutions of higher education: valuing the activities of teachers and raising their status, developing and supporting teaching initiatives, improving the quality assurance process in the innovative space of higher education, improving the quality of teaching; a fixed reward system for the best practicing teachers; at all stages of the academic career of promoting the professional development of teachers.
2. Expects from institutions of higher education successful expert evaluation, implementation of innovative practices, and collegial mentoring aimed at improving teaching to strengthen the culture of quality.
3. To improve the quality of higher education, it introduces a national electronic database; support for research, etc. (relevant national initiatives), which promotes trust and is generally aimed at improving the quality of higher education and the quality of learning and teaching in particular (Kalashnikova et al., 2023).

Nowadays, all states that joined the European Higher Education Area direct their functions to the implementation of the process of quality assurance in the innovative area of higher education, in coordination between the governments of the European countries of structural reforms. During the reform of higher education, the following are taken into account:

- priorities of education quality, preservation of cultural diversity of national education systems;
- the task of implementing international cooperation, spreading mobility, improving the employment of education seekers in the international or European area, and international competitiveness of higher education institutions (Kuchai & Kuchai, 2019).

Let us highlight the main principles of reforming the European Higher Education Area:

- ensuring the quality of education;
- social and global dimensions;
- promotion of employment of graduates;
- implementation of the principle of "student-centered" education; framework of qualifications; tricycle system of higher education; lifelong learning policies;
- mobility of students and teachers;
- internationalization of higher education.

The principles of reforming the European Higher Education Area are mandatory for consideration in the projects of educators and their strategic plans (Stratan-Artyshkova et al., 2022).

The European area of higher education aims at the continuous innovative development of higher education, which consists of the following:

- promotes economic attractiveness, quality, and social cohesion;
- encourages students and teachers to be mobile;
- is based on institutional autonomy, academic freedom, and participation in higher education management of students and teachers;
- promotes lifelong learning, employment of graduates, and development of the social dimension of higher education;
- sees students and employees of higher education institutions as active members of the academic community;
- is open to education in the world and cooperates in other parts of the world with higher education.

We see that the experience and examples of improving the process of quality assurance in the innovative space of higher education in European countries are recognized, they appear in the formation and implementation of strategic plans, are successful, actively adapted, influence changes in priorities and improve the principles of development of educational systems. Such experience in the extension of innovative educational projects to the latest standards, and its systematic involvement in education, will ensure the improvement of the process of quality assurance in the innovative space of higher education, the solution of a group of target tasks: activation of the social sphere and reform of education; updating development standards in the business environment; solving the problems of self-employment and employment of the population; formation of educational standards of management and information culture based on the best standards of social responsibility; increasing the potential of the IT sphere (Finahina et al., 2022).

Let's consider the features of the most used models of quality management of higher education in Europe.

The **German** model of professional education is a dual educational system based on a strong connection between production and the system of professional training. Regulation of the system of such training is carried out according to corporate norms.

The list of educational programs is determined in close cooperation between the federation, social partners, and regions based on the needs of the economy and is implemented within the framework of the dual system (Plakhotnik et al., 2022). The content of the educational program and its trajectory are based on the demands placed on a potential employee at the workplace. Dual education in Germany has budget funding and is a state program. In the conditions of the dual system of education, the training of specialists is implemented at the enterprise with the help of parallel training and at a vocational school. Vocational training is regulated and controlled at the enterprise by federal management bodies, and in vocational schools, the educational process belongs to the subject of granting individual lands (territories). They contribute to the implementation of the process of quality assurance in the innovative space of higher education and are educational regional institutes of the system of general and professional education (Kuchai, 2013).

The professional training system of **France** is a principled and regulated system of professional training that ensures the quality of higher education tied to the educational institution. In France, there is a rigid centralized system of management of education in general and vocational education in particular. In France, one of the most advanced educational systems has developed, in which the implementation of the quality assurance process in the innovative space of higher education is given the main importance. Therefore, investments in the educational sphere are supported by the state and have a priority nature. A positive point in the system of state quality control of French education is the implementation of the process of ensuring the quality of

higher education, the availability and openness of the results of evaluation and verification of the activities of higher education institutions, which gives the opportunity not only to society but also to the state, to evaluate the academic level of higher education institutions.

In **Denmark**, the following types of post-secondary education are distinguished: higher (non-academic and academic), open, extended, and everywhere priority is given to the implementation of the quality assurance process in the space of higher education. Higher academic education is represented by universities. Higher institutes provide higher non-academic education, but at the university level, they implement educational programs in the fields of music, architecture, engineering, economics, etc. Non-academic higher educational institutions train specialists who do not belong to the academic category: sociology, pedagogy, journalism, etc. (Minakova, 2012). In university centers in Denmark, you can get continued education. It is offered through courses of orientation and basic training in institutions of higher education. Open education is available to working people; adults who need advanced training or a change of profession. Open education consists of the study of specialized individual disciplines and is paid. The analysis of higher education quality control systems existing abroad shows that, despite the specificity and variety of powers of organizations engaged in educational provision, it traditionally includes: improving and ensuring the quality of educational activities of all countries in the social, economic, and cultural context; dissemination of best practices and experience in building a system for ensuring the quality of education at the university; supporting higher education institutions to improve the quality of learning and teaching (Karamyshev et al., 2020).

5. Conclusions

The effectiveness of the quality assurance system for higher education has been shown at the international level. The relevance of the problem of quality assurance in the innovative space of higher education is considered, first of all, in the context of the global space of higher education.

The complex components that include the quality of higher education is shown. The purpose of the European dimension in the field of ensuring the quality of the educational space is formulated.

The need for reforms in the operational and strategic management of education presupposes the introduction of recommendations and standards for quality assurance in the ESG European Higher Education Area. Standards and recommendations for quality assurance in the European area of higher education have become a powerful supranational tool for ensuring the quality of higher education, which strengthens the Europeanization of higher education.

The main factors of quality assurance in the innovative space of higher education and the main principles of reforming the European space of higher education are highlighted.

An effective tool for ensuring the quality of higher education is academic integrity, which is recognized as the moral code and ethical rules of the educational, scientific, and civilized community. According to the results of the project "Impact of Policies for Plagiarism in Higher Education Across Europe" in 27 EU member states, the systems and methods of combating plagiarism were analyzed and recommendations were made regarding the need to popularize the institutional culture of academic integrity:

The peculiarities of prioritization and actualization of the improvement of the quality assurance process in the innovative space of higher education, teaching in higher education in national cases (Austria, the Netherlands, Ireland, Norway) are considered.

Today, all states that joined the European Higher Education Area direct their functions to the implementation of the process of quality assurance in the innovative area of higher education, in coordination between the governments of the European countries of structural reforms.

Features of the most widely used models of quality management of higher education in Europe (Germany, France, Denmark) are considered.

Prospects for further research consist of the study of the main factors of quality assurance in the innovative space of higher education.

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Implementing artificial intelligence in civil procedure and legal education: challenges and perspectives


Implementación de la inteligencia artificial en la educación procesal civil y jurídica: desafíos y perspectivas

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Abstract

Artificial intelligence is increasingly used in various spheres of human life: industry, medicine, and defense. The latest technologies are beginning to be used in the Universities' classrooms and in the courtrooms. Gradually, the issue of using artificial intelligence in jurisprudence became relevant both for European countries and Ukraine. Therefore, due to the rapid implementation of artificial intelligence technology, it became necessary to consider the problematic issues of implementing the interaction of legal education, civil process and artificial intelligence. The purpose of the work is to conduct a study of the problematic issues of implementation of the use of artificial intelligence in the legal education and civil process. The object of research is artificial intelligence in the legal education and civil process. The subject of the research is the social relations that arise, change, and cease in the process of using artificial intelligence in the legal education and civil process. The research methodology includes methodological approaches (active, systemic, comparative, axiological), general methods of thinking (analysis, synthesis, abstraction, generalization), philosophical (dialectical, metaphysical, hermeneutic, epistemological), general scientific (historical, synergistic, functional, structural) and specifically scientific (formal-legal, comparative-legal) methods. As a result of the study, problematic issues of implementation of artificial intelligence technology in the legal education and civil process were analyzed.

Keywords: legal education, civil process, artificial intelligence, robotics, legal duties.

Resumen

La inteligencia artificial se utiliza cada vez más en diversas esferas de la vida humana: industria, medicina y defensa. Las últimas tecnologías se empiezan a utilizar en las aulas de las Universidades y en los juzgados. Poco a poco, el tema del uso de la inteligencia artificial en la jurisprudencia se volvió relevante tanto para los países europeos como para Ucrania. Por lo tanto, debido a la rápida implementación de la tecnología de inteligencia artificial, se hizo necesario considerar los temas problemáticos de implementar la interacción de la educación legal, el proceso civil y la inteligencia artificial. El trabajo tiene como finalidad realizar un estudio de los temas problemáticos de la implementación del uso de la inteligencia artificial en la educación jurídica y procesal civil. El objeto de investigación es la inteligencia artificial en la educación jurídica y proceso civil. El tema de la investigación son las relaciones sociales que surgen, cambian y cesan en el proceso de utilización de la inteligencia artificial en la educación jurídica y proceso civil. La metodología de investigación incluye enfoques metodológicos (activo, sistémico, comparativo, axiológico), métodos generales de pensamiento (análisis, síntesis, abstracción, generalización), filosóficos (dialéctico, metafísico, hermenéutico, epistemológico), científico general (histórico, sinérgico, funcional, estructural) y específicamente científico (legal-formal, legal-comparativo). Como resultado del estudio, se analizaron cuestiones problemáticas de implementación de la tecnología de inteligencia artificial en la educación jurídica y el proceso civil.

Palabras clave: educación jurídica, proceso civil, inteligencia artificial, robótica, deberes jurídicos.

1. Introduction

Information technologies have an increasing influence on social life every year. Now, artificial intelligence as the latest technology is expanding its spheres of influence. Artificial intelligence technologies make it possible to achieve various goals: from automating processes in the household to conducting court proceedings and making important decisions.

The dynamic development of artificial intelligence has a consequence of its use in justice. Because of this, it is important to analyze the ways of implementation and problems of implementation of artificial intelligence in the legal education and in the civil process of Ukraine.

The advent of artificial intelligence is attested by the quickening pace at which information technologies like deep learning, big data, and neural networks are being developed. Thought, emotion, and social talents were formerly thought to be uniquely human; nevertheless, AI is progressively bringing these capacities into play, and pedagogy based on them might result in profound shifts. For educators in general, adapting to changes in education in the AI age is both a problem and an opportunity (Monroe et al., 2019).

Many conventional teaching strategies include giving student's information, then having them answer questions on it. AI entails, among other things, capturing and mastering knowledge, strengthening student's analysis skills, intellectual valuation and response (Minn, 2022).

Thus, the introduction of AI into the educational process of future lawyers is inevitable. However, the use of AI in education is still insufficient. Instead, various areas of legal activity are already taking advantage of the advantages provided by AI technology, in particular, the judiciary.

According to the Concept of the Development of Artificial Intelligence in Ukraine (Order 1556-r, 2020) based on the results of the analysis carried out with the use of artificial intelligence technologies, the state of compliance with legislation and judicial practice. In addition, to implement the Concept, the High Council of Justice approved a plan of measures for the implementation of the Concept for the Development of Artificial Intelligence in Ukraine (Decision 283/0/15-21, 2021).

In general, the adoption of the Ethical Charter on the use of artificial intelligence in the judicial system and its environment by the European Commission for the Efficiency of Justice of the Council of Europe became a prerequisite for the use of artificial intelligence in civil proceedings. In particular, the Charter contains the main categories of involvement of artificial intelligence, namely advanced search systems of judicial practice; online dispute resolution; assistance in drafting lawsuits; predictive analysis; categorization of the provisions of the law according to various criteria and identification of discrepant or incompatible provisions; chatbots for informing parties or supporting them in court proceedings (European Commission for the Efficiency of Justice, 2018). An equally important document in this area is the White Paper on Artificial Intelligence: A European Approach to Excellence and Trust, which states: "Artificial intelligence must work for people and be a force that works for the good of society" (European Commission, 2020).

And despite the presence of regulation of some aspects of the use of artificial intelligence in Ukrainian justice, there are many problematic issues in the implementation of the tandem "artificial intelligence" and "civil process". Moreover, many issues of the legal personality of artificial intelligence remain undefined, including the following: whether artificial intelligence is identical to a computer program that works based on prescribed algorithms; can artificial intelligence be considered as an independent object of civil law regulation; what are the terms of liability for damage caused by artificial intelligence and/or systems that function on its basis.

All of the above determines the relevance of the research topic and requires a comprehensive analysis of the problematic issues of implementing artificial intelligence technologies in the civil process.

2. Methodological Framework

During the study of the problems of implementing the interaction of the civil process and artificial intelligence, the principles of scientific knowledge (historicism, scientism, comprehensiveness, pluralism), methodological approaches (activity, system, comparative, axiological), general methods of thinking (analysis, synthesis, abstraction, generalization) were used. The authors also used philosophical (dialectical, metaphysical, hermeneutic, epistemological), general scientific (historical, synergistic, functional, structural), and specifically scientific (formal-legal, comparative-legal) methods, the application of which ensured the validity and reliability of the research results.

Using the principle of historicism, the chronology of the development of legal regulation of artificial intelligence in Ukraine and the world was investigated. The principle of scientificity helped to reveal cause-and-effect relationships for phenomena, processes, events, and their subsequent inclusion in the means of obtaining scientifically proven knowledge that corresponds to the current level of scientific development. Thanks to the principle of comprehensiveness, the totality of available sources on the researched issue were analyzed, as well as various influences on the process of accumulating knowledge about the use of artificial intelligence in the judiciary, including civil ones, were taken into account. The use of the principle of pluralism made it possible to evaluate a wide range of opinions on the researched topic and conduct comprehensive research.

The practical implementation of scientific hypotheses regarding the place and role of artificial intelligence in the civil process was investigated using an activity approach. A comprehensive study of the problematic issues of implementing artificial intelligence in the civil process was conducted using a systemic approach because it was this approach that made it possible to reveal a complex of interrelated elements and relationships between them. The comparative approach made it possible to compare how artificial intelligence is used in different countries and under different conditions and to generally understand what circumstances affect the successful regulation of artificial intelligence.

The use of an axiological approach helped to investigate the given topic through ethical and moral aspects. In particular, the specified approach helped to analyze the use of artificial intelligence in the civil process from the point of view of orientation to the system of social values, the core of which is the understanding and affirmation of the value of human life, free creative activity, and human communication.

General methods of thinking made it possible to define such concepts as "artificial intelligence" and "civil process" and to analyze in detail the problematic aspects and inconsistencies of determining the place of artificial intelligence in the civil process.

Philosophical methods of scientific knowledge helped clarify problematic issues of legal practice regarding the use of artificial intelligence, including its responsibility. Taking into account these methods, the specifics of using artificial intelligence in judicial proceedings were clarified and an action algorithm was developed to improve the existing state of the researched issue.

General scientific methods were used to establish the peculiarities of the forms of interaction of the civil process and artificial intelligence, as well as to substantiate the importance of using international experience in the development of draft laws on the researched issue.

Concrete and scientific methods made it possible to understand more deeply the problems of implementing artificial intelligence in the judiciary of Ukraine and to formulate proposals for improving the forms and methods of interaction of subjects to avoid inconsistencies and contradictions in the regulation of artificial intelligence.

The use of all the above-mentioned methods in a complex made it possible to understand the problematic issues of the implementation of artificial intelligence in the civil process, to formulate scientific proposals on this issue, and in general to comprehensively analyze the possibilities of artificial intelligence for the implementation of judicial reform.

3. Results

Analysis of Recent Research on Legal Education, Civil Process and AI

A. Contreras and J. McGrath (2020) in their article «Law, Technology and Pedagogy: Teaching Coding to Build a "Future-Proof" Lawyer» analyze the pedagogical benefits of teaching "Coding for Lawyers" at law school. It also outlines the practical challenges in doing so. Drawing on legal research in this field, the experiences of others in delivering similar modules, and the experience of delivering lectures on coding for lawyers at the University of Minnesota School of Law, this article provides a first-hand account of where theory meets practice in delivering cutting-edge tech education courses. Given the increasing role that technology is playing in legal practice, this article argues that a knowledge and appreciation of coding, though not necessarily an expert ability to code, may be necessary to build a more "future-proof" lawyer who can navigate emerging developments and those yet to come.

J. Webb (2019) in his article «Information technology & the future of legal education: a provocation» explores challenges to legal education arising from the significant impact of new information and communications technologies (ICTs) on law and legal practice. It uses the pervasiveness of ICTs to reframe the question of "law and technology" from a philosophical perspective that sees information technology as an "environmental force" that is capable of re-shaping our identity, agency, and social relations, and hence constitutes a significant means through which we make sense of the world.

In his study, Burov (2020) considered the issue of responsibility for errors of artificial intelligence. The lawyer believes that if the national legislation of Ukraine enshrines the special status of a robot as an

independent subject of legal relations, the issue of responsibility for errors of artificial intelligence will be subject to adjustment. There is a need to introduce the status of "electronic personality", a separate type of insurance, the introduction of additional criteria for the distribution of responsibility between the manufacturer and the owner, as well as the search for answers to all other possible challenges that will arise in the process of further use of artificial intelligence in various spheres of human activity.

Vakareva (2021) considered the ethical and legal aspects of the regulation of artificial intelligence and its relationship with the protection of human rights. The researcher emphasizes that society needs to create certain ethical standards for the development and operation of artificial intelligence technologies. Among them: to establish legal control over developers, manufacturers, users, and lessors of innovative technologies; to determine the limits of responsibility; to outline the forms of accountability; in some cases - to use coercion to immediately suspend the operation of artificial intelligence systems; to raise awareness of people in the field of machine learning and neural networks. According to the researcher, safety and trust in the activity of artificial intelligence units should be a priority in its development.

The challenges of introducing artificial intelligence into the legal systems of different countries were considered by Voynikanis, Semenova, and Tyulyaev (2018). The authors considered the legal risks associated with the use of artificial intelligence and concluded that the development of artificial intelligence requires a change in the legal landscape.

Katkova's (2020) article examines the legal issues of artificial intelligence and the idea of creating a Map of Legal Reforms for the Use of Artificial Intelligence – an analytical, policy document that should contain the vision of the civil sector regarding the priorities of the use and development of the legal environment for developers and users of artificial intelligence. Attention is focused on the following issues: the status of artificial intelligence, compensation for damage caused by artificial intelligence, protection of personal data, intellectual property, and artificial intelligence, and problems of discrimination in connection with the use of artificial intelligence.

An important study in the field of the use of artificial intelligence in the civil process was conducted by Karmaza (2021). The author believes that the difficulty of using digital technologies in the civil process lies in the presence of an appropriate regulatory and legal framework; implemented cyber security measures; observance of the general rights and freedoms of a person and a citizen, established at the international and national levels; proper technical support of the relevant e-programs; the availability of knowledge and the ability to apply it by citizens; in public trust. Also, according to the researcher, a robot with artificial intelligence in Ukraine is not a subject of procedural legal relations or a subject of other legal relations, but such a robot as an "electronic person (personality)" can acquire legal status, provided that the general principles of use of the artificial intelligence are adhered (principles of respect for basic human rights and freedoms, non-discrimination, quality and safety, transparency, impartiality, justice, human control), and the limits, order, and methods of its activity will be determined by the law.

Klymenko (2021) considered the peculiarities of compensation for damage caused by robotics and artificial intelligence in her work.

Kozhevnikova (2022) considered problematic aspects of the use of artificial intelligence in civil proceedings. Thus, in her opinion, the application of artificial intelligence is possible in terms of the use of information technologies from artificial intelligence (for example, chatbots), at the same time, it is currently impossible to replace a judge with artificial intelligence in the implementation of judicial proceedings. The implementation of artificial intelligence in the consideration of civil cases will be effective when the technical support will be of a high level and will be able to ensure the adherence to all judicial principles, will ensure the transparency, impartiality, and fairness of the consideration of the case, will guarantee software and technical reliability and security for all participants in the judicial process.

The subject of Kolodin and Baytaluk's (2020) research was the issue of liability for damage caused by robotic mechanisms with artificial intelligence. The authors are convinced that the presence of a balanced doctrinal approach to the regulation of relevant relations will make it possible to develop the necessary changes to the current legislation in the researched area. In particular, it is worth supplementing the Civil Code of Ukraine with a special norm that would provide rules for compensation for damage caused by robots, and it is also worth using the concept of "quasi-subjectivity" of robots, with responsibility for damage caused by robots on the persons responsible for their creation and operation.

Kryvytskyi (2021) studied the trends and potential of artificial intelligence as a tool of legal reform. The scientist concluded that the potential of artificial intelligence technologies can contribute to the solution of complex, high-priority legal tasks, and the implementation of significant and progressive legal transformations (innovations in the legal system and legislation system). The use of artificial intelligence during legal reform makes it possible to significantly expand the horizons of legislative activity, improve the legislative process, and diversify the legislative technique.

Kulynych (2017) considered the possibility of granting the rights to the robots. The scholar claims that giving robots the status of subjects/participants in civil legal relations is aimed at satisfying the interests of robots with self-awareness. There is no practical need to provide such status to robots that are not self-aware. Before giving robots the status of subjects/participants of civil legal relations, the rights and obligations arising from the actions of robots will be considered to be the rights of the persons who use them to acquire/create the corresponding civil rights and obligations.

The issue of legal regulation of the use of artificial intelligence in notarial and civil processes as an element of protection of the rights of residents (inhabitants) of the temporarily occupied territories of Ukraine was considered by Lutska (2020).

Martsenko and Kucharska (2020) considered the prospects of recognizing new subjects of civil rights (legal relations), including artificial intelligence.

Research into the legal nature of artificial intelligence was carried out by Michurin (2020).

Onyshchuk (2021) considered in his work the peculiarities of the relationship between the law and morality while using artificial intelligence.

The question of the application of artificial intelligence in justice in the period of development of digital transformations of society was considered by Rykov (2020).

Sydorchuk (2017) highlighted the philosophical and legal problems of using artificial intelligence in his work. In particular, it was determined that moral and ethical problems give rise to legal issues related to the proper legislative regulation of the systems with artificial intelligence in various fields, including the acute issue of intellectual property of such systems, responsibility for damage caused by them, misuse of systems with artificial intelligence.

The problematic aspects of the definition and normative consolidation of the concept of "artificial intelligence" in the legislation of foreign countries and Ukraine were considered by Telychko and Rekun (2021).

In his work, Yavtushenko (2021) explored artificial intelligence from the perspective of civil law regulation. In particular, the author drew attention to the fact that artificial intelligence in the modern sense can be characterized as a specific type of autonomous computer program that can fully think and act like a person, and also has skills for independent (machine) learning, capable of making its own meaningful decisions in

situations not programmed in advance. The concept of "limited artificial intelligence" can be applied to autonomous computer programs that have all the characteristics of artificial intelligence but are capable of reproducing only individual intellectual processes of a person.

And despite a large number of studies on artificial intelligence, there is no comprehensive study devoted to the problems of implementing the interaction of the civil process and artificial intelligence. This makes it necessary to consider this topic in more detail.

General provisions on artificial intelligence

Scholars have been studying artificial intelligence since the 50s of the 20th centuries. The term "artificial intelligence" was first proposed in 1956 at Stanford University (USA). Thus, in this definition, artificial intelligence is understood as the ability of automatic systems to take over the functions of a person to choose and make optimal decisions based on previously acquired life experience and analysis of external influences. At the same time, the Oxford dictionary proposes to define artificial intelligence as the theory and development of computer systems capable of performing tasks that usually require human intelligence, such as visual perception, language recognition, decision-making, and translation between languages (Kryvytskyi, 2021).

The distinction between artificial intelligence and a computer program seems problematic. Let's consider this in more detail. Artificial intelligence is capable of working both on algorithms embedded in it in advance, and independently analyzing conditions and finding solutions that were not previously written for it, that is, finding its version of the implementation of a function in the absence of the prescribed conditions for its implementation. Computer programs can be divided into conditionally controlled (the operation of which requires the participation of a human operator) and autonomous. The features of autonomous programs also include the following: the ability to obtain and independently process information about the environment; the ability to work for a long period without human intervention; the ability to avoid creating dangerous situations for people, property, or oneself (Kryvytskyi, 2021).

So, as we can see, a computer program and artificial intelligence are not identical concepts. Given the possibility of artificial intelligence to make independent decisions and its features, opinions are increasingly being heard in the scientific community about the need to attribute artificial intelligence not to objects, but to subjects of law.

As already mentioned, the readiness to use artificial intelligence in ordinary processes (judicial, administrative) is evidenced by the European Union's rule-making activity. Therefore, artificial intelligence can be useful for building computational tools useful for legal practice.

Problems of implementation of artificial intelligence in the legal education and civil process

Legal education's epistemology must shift from the "retro" mode of doctrinal past (where past solutions are applied to present and future problems and the teacher's authority possesses all knowledge) to the "futuristic/projective" mode, wherein students are encouraged to tackle difficult problems head-on by building their skills and coming up with novel solutions. This new paradigm requires an interdisciplinary approach, drawing on fields of study that aren't typically part of a lawyer's toolset. Future professionals may benefit from a focus on legal education since it will provide them with the communication (collaborative working) skills, job possibilities, and the capacity to cope with the social realities of new technology. Coding and other technological innovations should be emphasized. The multidisciplinary approach should also emphasize recently implemented technologies to help students improve their imaginative, potential, and projective abilities based on use and inference. Training in conventional legal skills and abilities (still relevant in today's digital environment) must be linked with training in emerging technologies like blockchain,

artificial intelligence, smart contracts, databases, and quantum technologies (among others) to develop new solutions to new difficulties (Zia-ud-Din, 2023).

The main principles of the use of artificial intelligence in justice are determined by the European Ethical Charter on the use of artificial intelligence in judicial systems and their environment (European Commission for the Efficiency of Justice, 2018).

At the same time, the scientific doctrine highlights the main principles of using artificial intelligence in the justice system, which includes:

- 1) the principle of respect for basic rights, which provides for the introduction of artificial intelligence within the limits, in a manner and in an order that will not violate basic human rights guaranteed at the international and national levels;
- 2) the principle of non-discrimination, which involves preventing the development or strengthening of any discrimination between people or groups of people;
- 3) the principle of quality and security, which consists in ensuring that court decisions and the data used in them are protected and located in a secure technological environment;
- 4) the principle of transparency, impartiality, and fairness are the principles of ensuring the absence of the human factor when using artificial intelligence (preventing human intervention);
- 5) the principle of "under user control" should ensure a high level of autonomy and user awareness (Kryvytskyi, 2021).

We strongly believe that the use of artificial intelligence can indeed be useful in justice as an aid, but as a direct participant in the administration of justice will have risks in the context of possible software failures.

Article 14 of the Civil Procedure Code of Ukraine stipulates that courts operate a Unified Judicial Information and Communication System, which aims to ensure the exchange of documents in electronic form between courts, between the court and the participants in the legal process, between the participants in the legal process, as well as recording the legal process and participation of subjects in the legal process in the court session in the mode of video conference (Law 1618-IV, 2004).

The "Electronic Court" aims to speed up judicial processes, and ensure the accessibility of the civil process, reliability, security of information, and transparency of the consideration of cases. Moreover, the digitization of documents and processes plays an important role in guaranteeing the state's protection of the fundamental rights and freedoms of a person and a citizen, ensuring accelerated and unified data processing, every process in the relevant procedure becomes easier due to the use of digital tools.

The legislation of Ukraine does not provide for the regulation of artificial intelligence as a subject of procedural legal relations or a subject of other legal relations. But an "electronic person (personality)" can acquire such legal status, provided that the general principles of using artificial intelligence are observed. At the same time, there are no direct legal or other obstacles to the introduction of artificial intelligence in the legal process in Ukraine, but a special law has not been adopted.

Katkova rightly proposes a Map of legal reforms for the use of artificial intelligence in Ukraine, which should contain such areas as civil legislation (definition of legal personality, in particular, in which situations it can act as an intermediary of a natural or legal entity; conclude contracts; carry civil legal responsibility) (Katkova, 2020). We agree with the position of the researcher and believe that Ukraine needs to adopt a separate legislative act in the field of using modern digital technologies and artificial intelligence.

Analyzing foreign experience, it is worth noting that in European justice systems, the use of artificial intelligence algorithms remains mainly an initiative of the private sector and is not properly perceived by

the state, and individual issues of the use of artificial intelligence are subject to criminal prosecution. For example, in France criminal liability is provided for the analysis of judicial practice, which makes it possible to predict what decision a particular judge may make in a case. Such responsibility was accepted under the pressure of the judicial corps, arguing that court decisions are used to analyze the pattern of behavior of a particular judge, which violates his personal rights (Burov, 2020).

Regarding the problem of implementation of artificial intelligence in the civil process, the question arises regarding the scope and directions of such application. For example, when considering a civil case of minor complexity, it is possible to use an artificial intelligence system that will be able to independently summarize and analyze legislation, and court practice and thus help the judge make a fair and legal decision. This will help in the future to reproduce not only the modern human model of cognition and data reproduction but also to speed up and relieve the work of judges, making it even more efficient. At the same time, the main role of artificial intelligence should be defined not as a replacement for the judge in the implementation of judicial proceedings, but as a kind of assistance for the administration of justice by the judge. However, there are risks of using artificial intelligence in the civil process, including a lack of adequate material support, and an insufficient number of leading specialists in the field of information technologies. But there are also advantages, which consist in the possibility of speeding up and relieving the judicial proceedings, and in general, making the work of the courts more efficient.

4. Conclusions

As a result of the research, the problems of implementing artificial intelligence in the legal education and civil process were analyzed and the following conclusions were drawn.

1. Artificial intelligence in the modern sense can be characterized as a specific type of autonomous computer program that can fully think and act like a person, and also has skills for independent (machine) learning, capable of making its own meaningful decisions in situations not programmed in advance.
2. Human legal professionals will always be needed, but they must adapt their knowledge to a world that is always evolving. In today's conditions, the skills of working with innovative technologies should become an indispensable attribute of a modern qualified lawyer.
3. Training of law students in conventional legal skills and abilities must be linked with training in emerging technologies like blockchain, artificial intelligence, smart contracts, databases, and quantum technologies to develop new solutions to new difficulties.
4. The problems of implementing artificial intelligence in the civil process arise due to the lack of adequate material support, an insufficient number of leading specialists in the field of information technologies, and the lack of a reliable personal data protection system. This makes the task of preparing students of legal educational institutions taking into account modern technologies extremely important.
5. When implementing artificial intelligence technology in civil proceedings and in jurisprudence on the whole, it is important to ensure compliance of digital technologies with the principle of the rule of law and the non-violation of the fundamental rights and freedoms of citizens. AI decisions must be explainable, and humans must control the use of AI in civil proceedings.

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Possibilities of using smart technologies in the higher education system for high-quality training of specialists

Posibilidades de uso de tecnologías inteligentes en el sistema de educación superior para la formación de especialistas de alta calidad


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Abstract

The goal of Smart-education of the XXI century is written out – the development of skills in the conditions of a digital society, which are necessary for the successful professional activity of specialists; provision of an environment that creates competitive specialists due to a high level of development of the skills and knowledge of modern society among students of higher education. The concept of Smart-education is described, which involves the creation of an intellectual environment for the application of Smart-technologies in the higher education system with the aim of quality training of specialists, and continuous development of phase competencies in participants of the educational process. The main ideas that form the basis of the Smart concept are highlighted. The reason for the necessary implementation of Smart-

learning is proven. Positions unifying the educational process in the Smart environment are shown, the vision of the Smart-education strategy is presented, and its ultimate goal is described. In the process of our search, we conducted a survey of students and university teachers in order to compare the answers of the respondents and their actual attitude to the implementation of Smart technologies in the educational process.

Keywords: Smart education, Smart technologies, Smart environment, the system of higher education, quality training of specialists.

Resumen

Está escrito el objetivo de la Educación Inteligente del siglo XXI: el desarrollo de habilidades en las condiciones de una sociedad digital, necesarias para el éxito de la actividad profesional de los especialistas; provisión de un entorno que cree especialistas competitivos debido al alto nivel de desarrollo de las habilidades y conocimientos de la sociedad moderna entre los estudiantes de educación superior. Se describe el concepto de Educación Inteligente, que implica la creación de un entorno intelectual para la aplicación de tecnologías Inteligentes en el sistema de educación superior con el objetivo de una formación de calidad de especialistas y el desarrollo continuo de competencias de fase en los participantes del proceso educativo. Se destacan las ideas principales que forman la base del concepto Smart. El porqué de la necesaria implementación del Smart-learning está comprobado. Se muestran posiciones que unifican el proceso educativo en el entorno Smart, se presenta la visión de la estrategia Smart-education y se describe su objetivo final. En el proceso de nuestra búsqueda, realizamos una encuesta a estudiantes y profesores universitarios para comparar las respuestas de los encuestados y su actitud real hacia la implementación de tecnologías inteligentes en el proceso educativo.

Palabras clave: Educación inteligente, tecnologías inteligentes, entorno inteligente, el sistema de educación superior, formación de calidad de especialistas.

1. Introduction

Currently, the system of higher education, like society as a whole, is characterized by dynamic changes in educational technologies. The development of information and communication technologies and the Internet necessitates the introduction of smart technologies into the educational process of higher educational institutions.

The development and use of smart technologies in the teaching of disciplines raises the quality of student education to a new level, which meets the current and future needs of society for highly qualified specialists. The advantages of smart technologies are that they can develop students' creative abilities, professional knowledge, communication skills, ICT literacy; to form critical thinking, an innovative approach; to improve the skills of effective cooperation and mutual understanding, leadership, career development.

The 21st century creates a new stage of technological paradigm changes for modern society. The image and essence of the 20th century were determined by information technologies, which have now given way to Smart technologies, intending to open a new path of development in the society of the 21st century: Smart education, Smart economy, and Smart society. A Smart learning environment includes Internet infrastructure and ICT convergence. The development of information and communication technologies and the intensive introduction of e-learning into traditional education have led to Smart-education (Kademiya & Kobysia, 2019).

The smart information society is formed from civil society institutions, educational institutions, organizations of various levels, government bodies, and enterprises. A key aspect of smart education is the application

of an adaptive approach based on the understanding of the country's citizens' motivation for change and their mentality. In connection with the development of society, the transition to Smart-education involves the opening of the content of higher education institutions to Smart-technologies for high-quality training of specialists, the growth of electronic mass media, the wide implementation of international standards, the emergence of vertical and horizontal competencies, the use of electronic textbooks, educational platforms, increased attention to the possibilities of realizing the potential, innovative resources and opportunities for the use of Smart-technologies in the purpose of high-quality training of specialists in scientists, teachers, students (Podlesnyi et al., 2019).

Mastering the techniques and methods of smart technologies requires the training of specialists in the field of smart education and the upgrading of the qualifications of teachers of higher education. The teacher should create a fundamentally new methodological support for training courses for the effective use of smart technologies.

Wide access to electronic educational materials through smart technologies and IT tools directs the student to independent acquisition of professional competences. Student learning is becoming more personalized, which becomes the basis for the development of personal educational programs focused on intelligence, creativity and creativity of future specialists.

2. Literature Review

The problem of using new information technologies in the educational process has been actively studied over the last decade, but remains quite relevant. In many studies of domestic and foreign scientists and teachers, the peculiarities of the use of new information technologies in the educational process have been considered. In particular, scientists such as Yu. Lukyanova, & V. Komar (2020). They revealed the significance of smart technologies, noted the varieties, and proved that smart technologies initiated a new educational paradigm. They showed the possibilities of smart technologies for the educational process and the formation of a creative personality, developed a trend for the implementation of tasks in the educational space; proposed ways of using smart technologies in the learning process, which encourages learners of educational space to engage in cognitive and creative activities.

Yu. Drachuk, L. Sav'yuk, & Ye. Snitko (2019) developed the stages of application of smart technologies and revealed the priority direction of innovative technologies in the educational process of higher education institutions. Determined the most effective indicators and criteria; characterized the effective principles of using smart technologies. They showed the possibilities of using Smart technologies in the educational process. The professional competencies of education seekers, which can be acquired with the help of Smart technologies, were described.

M. Kademiya, & V. Kobysya (2019), based on modern network technologies, showed the possibilities of Smart-technologies, the ways of designing and implementing Smart-learning, and the possibilities of smart technologies for the higher education system for quality training of specialists. We analyzed the approaches to the formation of requirements for the creation of a Smart textbook, and implemented the design of Smart education for the higher education system using cloud technologies, using network technologies in a higher education institution. The systematization, analysis, and generalization of studies on the problem of using the capabilities of Smart technologies for quality training of specialists for the higher education system in scientific, educational, and organizational activities have been carried out. Recommendations for designing open software and a Smart textbook were developed using Internet resources. The possibilities of smart technologies for the higher education system for high-quality training of specialists are shown.

A. Kushnir (2020) showed the advantages of using Smart technologies, in particular social networks for the higher education system for high-quality training of specialists, which enable students to create their own

content, YouTube as a teaching and learning tool, blogs, which is convenient and fashionable among students; form a special communicative space; complex educational material, a Smart textbook, which is created using the Internet and technological innovations; mobile education technologies (the educational process is carried out with the help of gadgets and software). The importance and necessity of using Smart-technologies in the educational process are shown, and the diversification and interest of using Smart-technologies in the educational process are shown to increase the cognitive interest and motivation of education seekers due to the real, visible result of their professional activity, which allows the application of traditional and innovative learning technologies, ensures the exit of educational services to a new level of quality.

Scientists emphasize that the introduction of ICT into the educational process and its digitalization allows the implementation of a new format of education. The informational and advisory environment, created by means of ICT, is considered by modern scientists as a component of the educational environment and acts as a complex, multifaceted formation.

R. Gurevich, & K. Maya (2016) gave a definition of Smart-education, based on the transition to Smart-education and the development of e-learning, showed the peculiarities of improving the educational system in higher education institutions, emphasized the need to develop open online courses, use modern ICT and their use in the educational process of higher education institutions, improve the qualifications of specialists throughout their lives with the help of such components that are the basis of the implementation of Smart-education in higher education institutions: organizational, technological, pedagogical.

O. Rogulska, & O. Tarasova (2016) showed ways to implement Smart-education in a higher education institution, which will contribute to the acquisition of competencies by the training of specialists for lifelong learning and the conditions of the modern labor market. Based on the smart Board, the importance of the software-technological educational complex, which is known as the "interactive board" and is the main component of smart technologies, was revealed. The software-technological educational complex with the help of traditional and innovative pedagogical learning technologies allows to create an information and communication environment.

T. Lagutina (2014) presented the meaning of the concepts of "Smart-education", "Smart-society", "Smart-learning", "Smart-university", where the teacher is not a carrier of information, but a facilitator of communication in the process of joint activities with students of education. The main factors for the application of Smart technologies are described: dynamic adaptation to social changes and the surrounding environment of future specialists; rapid transfer of knowledge and information by the requirements of the information society reforming the educational system.

A. Sydorenko (2019) proved the significance of technological smart tools for the field of education: programs: Bridgit, Calameo, Prezi, PhotoPeach, Dipity; software for implementing the educational process of a communicative and interactive nature; Smart projectors; Smart-boards that allow you to carry out the educational process with high quality and quickly present presentations for partners and others all over the world.

Analyzing the works of scientists, we note that smart technologies, despite their prevalence and undeniable value in the educational environment of higher education institutions, are not fully used for the purpose of professional training of teachers.

The analysis of psychological and pedagogical literature proves that the effective introduction of smart technologies into the educational process is possible under the conditions of the introduction into the educational process of their preparation of information and communication technologies of education.

Purpose of the article: to find out the possibilities of Smart-technologies for the higher education system for high-quality training of specialists.

3. Methodology

To achieve the goal, research methods were applied: comparative analysis of normative, legislative documents, pedagogical, psychological, philosophical, methodical sources – to determine the component composition and essence of the studied ability, clarify the state of development of the problem of applying Smart technologies for the higher education system for the purpose of high-quality training of specialists, clarification of the conceptual and categorical research apparatus; generalization, synthesis – to justify the methodological and theoretical foundations of the research; modeling – for designing a pedagogical system for the application of Smart technologies for the higher education system for the purpose of high-quality training of specialists; systematization – for formulating conclusions; pedagogical forecasting – to develop the possibility of Smart technologies for the higher education system with the aim of quality training of specialists and promising areas of professional training of competitive specialists.

The study is based on the introduction of developed Smart technologies for the higher education system with the aim of quality training of specialists that ensure the effective formation of a competitive person, purposeful training in the created Smart society, oriented in the educational process to the modernization and modification of components using modern technologies.

Based on the approaches of scientists, the results of the analysis of the scientific search for Smart-technologies for the system of higher education for quality training of specialists in the Smart-society, education is considered as an educational process using the Internet and technological innovations, which contains a large number of sources, is flexible, includes a variety of multimedia, and can simply adjust to the needs of the future specialist.

The scientific search for proving the importance of Smart technologies for the higher education system with the aim of quality training of specialists in the unity of interrelated concepts: methodological, theoretical, technological, and practical.

The methodological concept of purposeful application of Smart technologies for the system of higher education for high-quality training of specialists represents approaches to the study of the specified problem, which are the main ones:

- systemic, which ensures the organization of systemic actions aimed at the formation of the studied phenomenon; study of the problem of applying Smart technologies for the higher education system with the aim of quality training of specialists, quality formation of the consciousness of future specialists in the process of preparation for competitive work at all stages of research;
- personally oriented, which involves the creation of methods, content, and environment for the application of Smart-technologies for the higher education system for high-quality training of specialists, individual self-realization of education seekers, disclosure of the personal potential of the future specialist, self-development of a person's personal qualities;
- competency-based, which involves the reorientation of the educational paradigm to creative, active, independent activity for the higher education system for high-quality training of specialists, when the potential of each student of higher education is revealed, which allows them to actively apply acquired competencies and act professionally in various life situations;
- activity, which justifies the use of Smart technologies for the higher education system for high-quality training of specialists in the process of active activity;

- axiological, which directs educational activities to the application of Smart technologies for the higher education system for high-quality training of specialists, humanistic development of the individual to acquire the value of life;
- reflexive, aimed at the formation of Smart technologies for the higher education system to stimulate professional self-development and self-improvement, quality training of specialists, and self-monitoring of the effectiveness of professional activity in the professional sphere.

4. Results and Discussion

Smart education generates this new quality of society, this "Smart-Society", new ideas, and knowledge aimed at the development of a Smart-environment, Smart-society, such an intellectual environment where future specialists are specially prepared for the implementation and implementation of the latest ideas and concepts (Kademiya & Kobysia, 2019).

Currently, the world is witnessing a paradigm shift in the development of the educational sector, which is associated with the emergence of innovative open online courses (Massive Open Online Course (MOOC)). Because of open access to the Internet, they are interactive, large-scale, free, educational courses. Since 2013, an innovative platform for MOOS – NovoED – has been launched. This project was proposed by the developers of Stanford University. Where they offered many practice-oriented courses, which are characterized by: the implementation of projects, productive teamwork, a new rating system, strengthening of communication between members of working groups, absence of tests, and responsibility of each participant for the performance of a common task. All this contributes to the successful assimilation of integral courses and motivates students to study. MOOS was created as a network project in the USA for leading institutions of higher education but has proved to be very popular and constantly attracts a large number of institutions of higher education from all over the world. The EDX project was first joined in 2013 by such institutions of higher education as Seoul National University, South Korea (SNUx), Hong Kong University of Science & Technology (HKUSTx), The University of Hong Kong (HKUx), Peking University, China (PekingX), Kyoto University, Japan (KyotoUx) and others. The first European MOOS was created in May 2013. The project presented 40 free courses in 12 different languages, which were created by the European Association of Distance Learning Universities (EADTU). Great Britain, Israel, Italy, Spain, Lithuania, Netherlands, Portugal, Slovakia, Turkey, and France took part in the project. Therefore, each institution of higher education should not develop its MOOS in full (Gurevych & Maya, 2016).

In the Smart society, education is considered as a process using the Internet, smart technologies for the higher education system for quality training of specialists. The Smart-education paradigm presupposes an active exchange of experience and ideas, a large number of sources, personalization of the course, the ability to easily and quickly adapt to the needs and level of the learner, including the flexibility and variety of multimedia, saving time on refining already existing educational content instead of creating it from scratch (Ivanenko, 2014).

The main goal of Smart-education is to develop the skills necessary for the successful professional activity of specialists in the conditions of a digital society.

When analyzing technological innovations for the field of education, which are positioned as Smart, we will list the following: software for creating educational content, Smart-textbooks, Smart-projectors, Smart-boards, software of an interactive and communicative nature for the distribution of educational content; Smart technologies: Web 2.0 (Data Mining technologies, types of Social Media) used in the Smart-education segment, Google services and tools, Facebook social service, Wiki website, for distribution of video and sound files, blogs, YouTube video hosting, etc (Martyniuk et al., 2022).

The concept of Smart-education provides for the creation of an intellectual environment for the application of Smart-technologies for the higher education system with the aim of quality training of specialists, and continuous development of phase competencies in participants of the educational process. The technical basis for the implementation of Smart technologies for the higher education system for high-quality training of specialists is a set of devices (smartphones, laptops, computers, tablets, etc.) belonging to both students and educational institutions, as well as the presence of an Internet network (Kushnir, 2020).

The concept of smart education contributes to the formation of a paradigm of Smart technologies for the higher education system with the aim of quality training of specialists capable of ensuring the quality organization of the learning process throughout life and in close relationship with the requests and needs that are programmed by the system of social reproduction. Integration of Smart-education in the system of higher education gives rise to several paradoxical phenomena, which are related to software, teaching, financial, material, and technical support of the educational process; the process of knowledge transfer, the transformation of the composition of education providers by its results and effectiveness, monitoring of their assessment (Lypov, 2019).

The mechanization of human life requires a high level of literacy among all members of society (Omonayajo et al., 2022). The development of the world economy requires well-trained specialists of various levels. The concept of "Smart" can respond very quickly to the demands of the world and its economy. As part of the development of progress, most developed countries promote the concept of Smart not only in the education system but also in the economy as a whole (Alelaiwi et al., 2015).

Let's highlight three main ideas that form the basis of the Smart concept:

1. Mobile access. Providing all kinds of digital services anywhere in the world, while the services are directed individually to each user.
2. Creation of new knowledge. The development of each country is not possible without the constant acquisition of competitive knowledge, which forms the basis of the modernization of the economy.
3. Creating a Smart Environment. The appearance of certain technological developments is possible in the Smart environment, which allows stimulating science and industry and reaching the world level when one of the main ideas is the basis of a "smart" economy and the information and technological environment approaches natural intelligence (Huzenko, 2020).

The intensive development of applications to digital technologies and their rapid development contributed to the emergence of mobile education technologies, in the case when training is carried out using:

- own gadget;
- Smart application;
- special software.

The Google system helps to install the software, using the "Play Market" application. Such an application is installed in the tools of the mobile operating system of Android smartphones and tablets.

In the Google system, when registering an account, students have access to all network applications of the Google system. The application provides education seekers with a wide range of categories for study and leisure. When you enter the name of an educational subject in the Google Play Market search engine, a list of mobile apps will appear from any subject, such as: "Kahoot", "LearningApps", "WiseMapping", "Thinglink", "Word It Out!" etc. The "Plickers" application, which simplifies the teacher's life, allows you to survey students in any subject directly and in just a few minutes. The basis is the website, mobile application, and cards with QR codes (Quick Response). Using "Plickers" provides an opportunity to get away from routine activities and is real entertainment for students, because the game form can be given to answer questions (Kushnir, 2020).

The main aspects of Smart-learning are the creation of an open and flexible educational environment: the use of open educational resources, gadgets, and an educational process management system.

To the new requirements of a Smart society and Smart economy, the reason for the actual implementation of Smart education is the urgent possibility of improving the entire existing educational system (Yang et al., 2022).

The main goal of Smart-learning in the 21st century is to provide an environment that creates competitive specialists at the expense of a high level of development of the skills and knowledge of modern society in the students of education:

- ability to think critically;
- social responsibility;
- cooperation and communication;
- prompt and high-quality problem-solving (Washizaki et al., 2020).

For the modern system of higher education with the aim of quality training of specialists in a Smart environment, the educational process combines:

- knowledge and databases, electronic textbooks, libraries, additional materials, educational and methodical complexes, etc.;
- in the open model of individual asynchronous learning, the interaction of education seekers;
- means of electronic communication, software shells.

The vision of the Smart-education strategy and its ultimate goal is the promotion of global human talents, and the development of creative abilities, through the "revolution in the group", to update the content of education, teaching methods, and knowledge monitoring:

- to work and collaborate on project tasks, teachers join SNS social networks (<https://education.microsoft.com>);
- teachers work in Smart Classroom (<https://classroom.google.com>), at the level of an educational institution for the successful implementation of Smart-education, improving classes in workshops, laboratories, and classrooms, solving educational problems of students.

The organization of feedback is an important factor of Smart-education, to preserve educational materials, student motivation, and records. In this process, the creation of cyberspace is necessary for the joint further use of resources.

Therefore, for Smart-learning, a created Smart-environment, a Smart-textbook with authorization based on the construction of an individual learning trajectory and the help of an account are necessary (Kademiya & Kobysia, 2019).

The implementation of Smart-technologies for the system of higher education for the purpose of quality training of education specialists should be aimed, first of all, at determining what needs to be studied in specific conditions, at ensuring the search, acquisition, transfer and presentation of knowledge. In the process of our search, we conducted a survey of students and teachers. A total of 200 respondents took part in the survey: 126 students and 74 teachers. The text of the questionnaires for students and teachers contained questions where you could choose one of the possible answers to each question: Some questions of questionnaires and teachers were identical. With this, we followed the goal: to compare the answers of the students of the educational process and their actual attitude towards the implementation of Smart

technologies in the educational process. We present the results of the conducted survey, where we included only those questions, the answers to which gave us the opportunity to make a comparison.

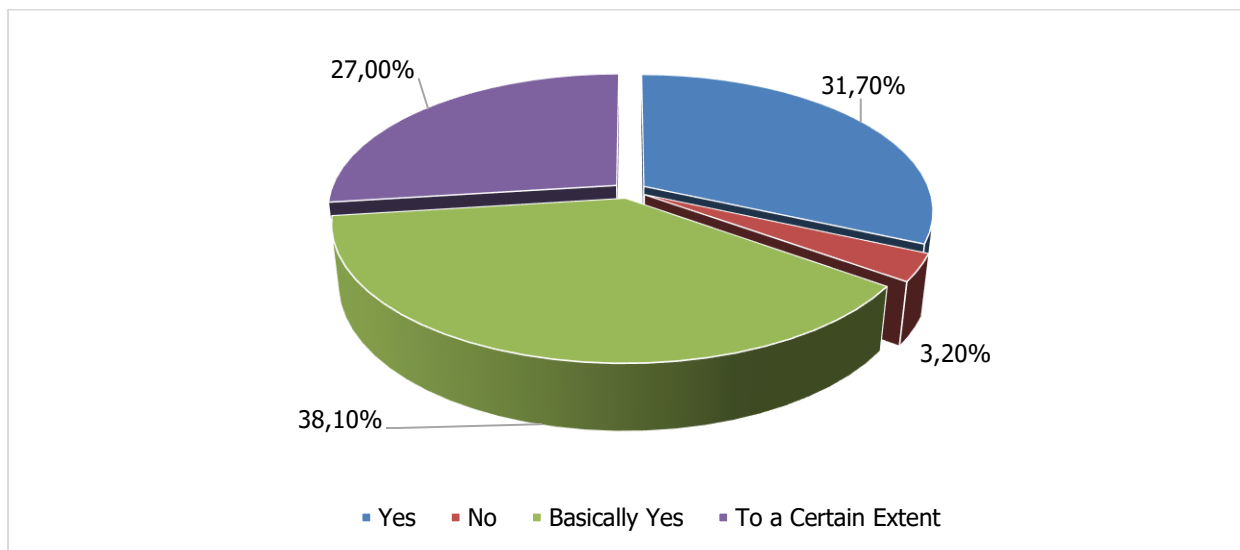


Figure 1. Answers of the respondents regarding the necessity of implementing Smart learning technologies in the system of professional education.

As we can see from fig. 1. the majority of respondents agree that it is necessary to implement Smart learning technologies in the system of professional education.

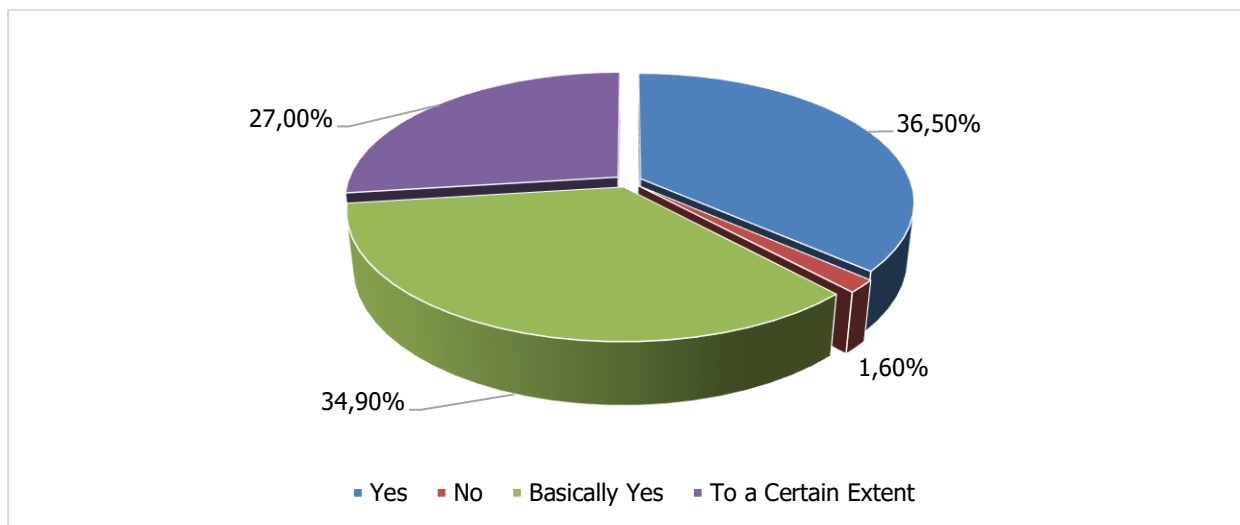


Figure 2. Answers of respondents regarding the actual benefits of using Smart learning technologies in the process of professional training in vocational schools

Fig. 2 a diagram is presented, which testifies to the benefits of using Smart learning technologies in the process of professional training of specialists in higher education institutions.

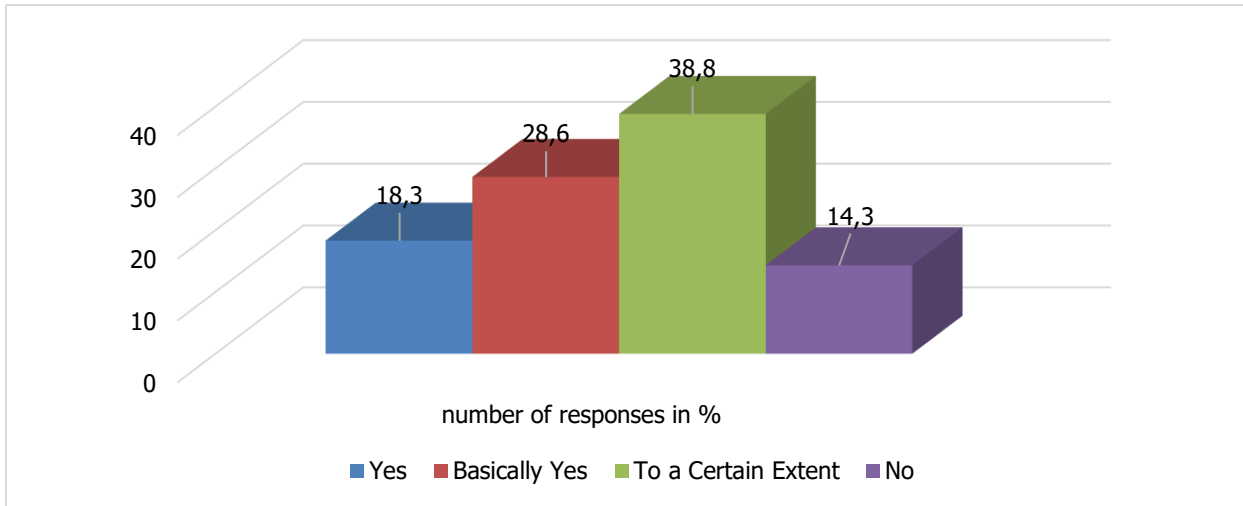


Figure 3. The results of the students' answers regarding their attitude to learning with the use of Smart technologies of learning in university.

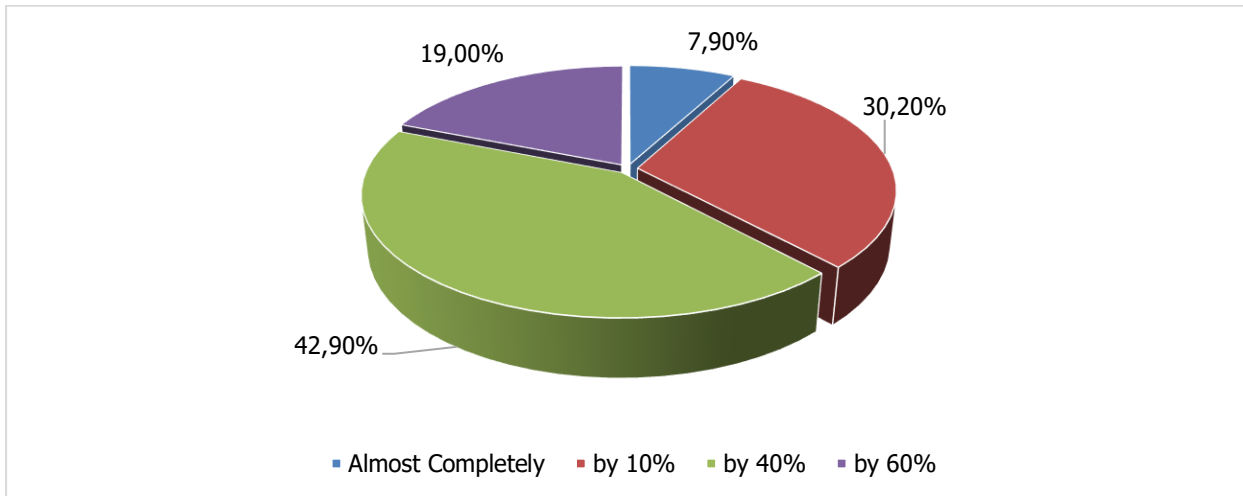


Figure 4. The results of students' answers on the direct impact of Smart learning technologies.

Fig. 4 diagram of the results of students' answers on the direct impact of Smart learning technologies on the formation of their personal qualities 42.9% of students answered that, in their opinion, almost 40% of the introduction of Smart-technologies into the educational process of higher education ensures the formation of their personal qualities (Fig. 4). To the question: what percentage of teachers who work with you are focused on the use of Smart learning technologies, 42.9% of students answered that, in their opinion, almost 10% (Fig. 5).

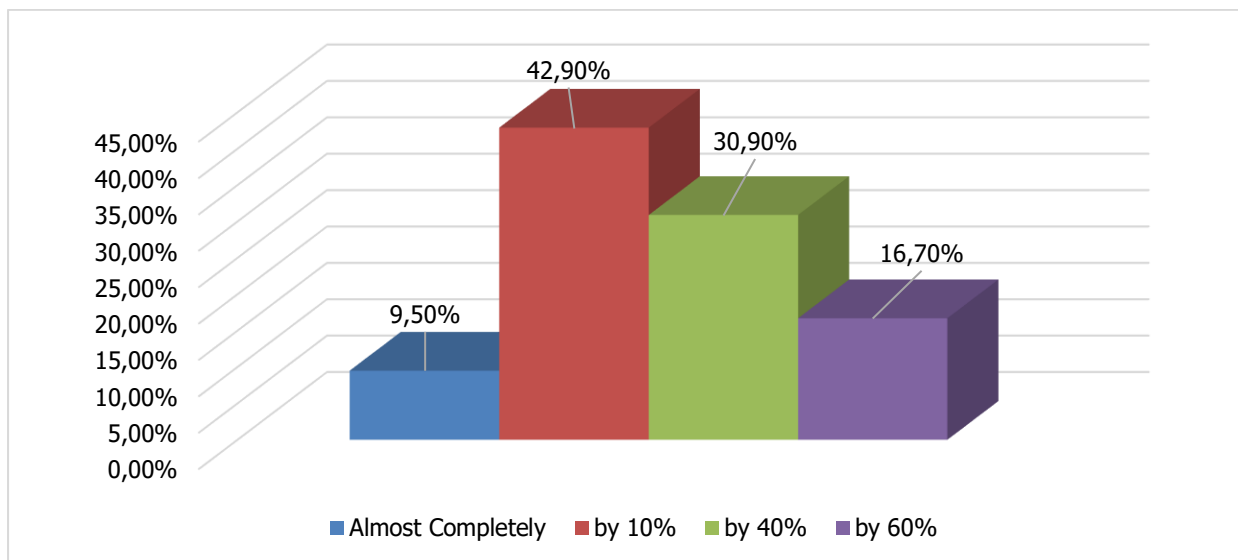


Figure 5. Orientation of teachers to the use of Smart technologies in the educational process (based on the results of a student survey).

Fig. 6, we have presented a diagram that allows us to compare the answers of students and teachers regarding the actual use of Smart technologies in the educational process of higher education institutions.

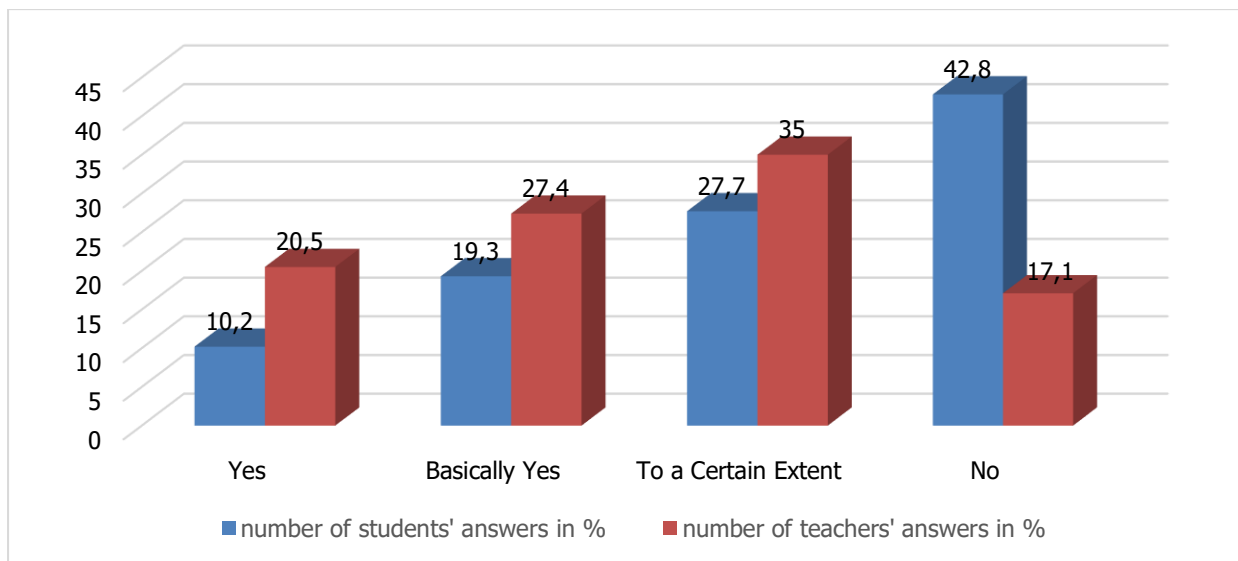


Figure 6. Results of a survey of students and teachers on the actual use of Smart technologies in the educational process of higher education.

As we can see, the results of students and teachers differ somewhat. In our opinion, this is explained by the fact that some of the teachers did not answer the question honestly enough. However, in terms of the effectiveness of using the method in the educational process of Smart-technologies, the answers of teachers and students differ little from each other (Fig. 7).

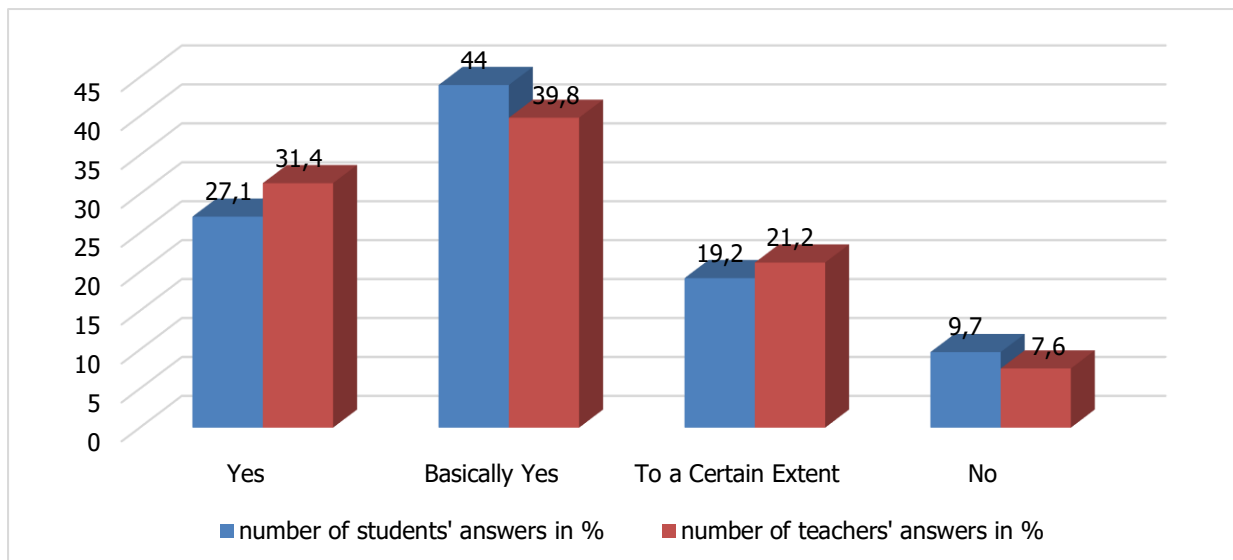


Figure 7. Results of a survey of students and teachers on the effectiveness of innovative methods using Smart technologies in teaching subjects in a higher education institution.

The results of the study showed the need to introduce Smart technologies into the educational process for the purpose of quality training of competitive specialists.

Opportunities to realize the potential of innovative resources are laid in scientists, teachers, and students. In order to implement high-quality Smart education, it is necessary to implement the principles of Smart education and three main components: technological, organizational, and pedagogical.

Let's highlight the main principles of Smart education:

1. Organization of research, independent, project, cognitive activities of education seekers. This principle is the main one for the higher education system, contributes to the high-quality training of specialists, and encourages students to research independent, informational activities, and creatively search for solutions to assigned tasks.
2. Use of current information to solve educational problems according to the educational program. In the world and professional activities of specialists, the volume and speed of information flow are growing rapidly. Educational materials, to solve practical tasks, must be supplemented with information in real time, to work in a real situation.
3. Implementation of the educational process in a distributed educational environment. Nowadays, the educational environment is not limited to the distance learning system or the territory of the higher education institution. The learning process to apply Smart-technologies for the system of higher education should be continuous, including educational activities with the use of tools of professional activity in a professional environment.
4. Interaction of education seekers with the professional community. In the educational process, a professional environment for the quality training of specialists is important. The use of Smart technologies for the higher education system in the educational process provides an opportunity for all students to participate in telecommunication projects, create software products, work in professional environments, and more. The task of a higher education institution is to provide educational services by the needs and capabilities of those seeking education.
5. Individualization of training and the use of flexible educational trajectories for this purpose. The educational process is carried out not only by education seekers, but also by working citizens who wish

to carry out their retraining, gain competitive knowledge, and improve their qualifications. The task of an educational institution is to provide, by the needs of each person, educational services.

6. Multifaceted educational activity for all those who wish to learn, providing wide opportunities, from any educational program by the capabilities of the institution of higher education, social conditions, and laboratories.

To implement Smart-education, it is necessary to implement three main components: technological, organizational, and pedagogical.

The basis of the technological component is information Smart technologies, the properties of which are: the possibility of data personalization, interactivity, the creation of a virtual personality of the user, and the ability to intelligently analyze data. In the higher education system, for high-quality training of specialists, a variety of multimedia capabilities, and capabilities of Smart technologies that allow the creation of educational content can be used. "Smart" technologies create a "presence effect", significantly speed up the exchange of content, change its qualitative composition, and enable communication between students of education.

The organizational component of Smart education is based on the effective application of Smart technologies. Educational programs should be formed based on the profiling of education, taking into account the possibility of integration of various educational programs, and individual educational trajectories. Compliance of educational programs with the principle of continuity of learning (lifelong learning) is mandatory. Great importance should be attached to the management of educational resources, educational content in Smart education. To achieve this goal, it is necessary to constantly adjust educational resources, supplement educational activities with information from blogs, sites, web quests, etc.; implement academic knowledge management to ensure flexibility in the development and use of educational content (Koval-Mazyuta et al., 2023).

The pedagogical component of Smart-education is an effective combination of pedagogical methods of learning and technologies for their achievement. Training tools are formed on their basis and specialized information Smart technologies are used (Gurevych & Maya, 2016).

During the experiment, we saw the need, when applying Smart technologies, to develop such requirements for teachers as: the ability to use the available pedagogical toolkit of the lesson, to integrate it into the multimedia space. With this approach, the teacher uses interactive infographics, slides, presentations, audio and video materials, etc., that is, independently developed multimedia products and products obtained by connecting to external sources. To master the methods and techniques of Smart-technologies, it is necessary to improve the qualifications of higher education teachers and innovative training of specialists in the field of Smart-education (Kademiya & Kobysia, 2019).

During the experiment, the main tasks of implementing Smart technologies in the higher education system with the aim of quality training of specialists were highlighted:

- creation of infrastructure for the implementation of Smart technologies;
- the electronic board and tablets must be connected, to ensure convenient work in the classroom for the quick transfer of data from the teacher's tablet or blackboard to the device of the students;
- application of platforms for Smart technologies;
- conducting teacher training in specially equipped Smart-classes;
- for life-long learning in an electronic environment with Smart-devices to enhance teachers' ICT competencies;
- based on wireless Internet, conducting educational events with the expansion of the influence of mobile learning;

- provision of educational space with Smart devices (tablets such as Galaxy Tab, Galaxy Note, Ipad mini, Ipad; mobile phones, portable computers with telephone functions based on the operating systems IOS, Windows Phone, Android, and others that perform the function of downloading and deleting programs);
- the creation of an educational trajectory of an individual route of knowledge acquisition and professional development of the personality, which reflects the creativity of teachers, talent, and personal abilities of a person;
- creation of an educational community for active learning from the provided content on the Internet with the greatest efficiency of knowledge acquisition;
- creation of flexible learning in an interactive educational environment, uniting teaching staff and educational organizations in the "Internet" network for joint educational activities based on agreements, common standards, and Smart technologies;
- application of "Flipped Classroom", a new teaching method;
- support of bilateral services using smart technologies for the higher education system for high-quality training of specialists: on one platform, education seekers choose different services;
- development of training courses using Smart technologies, human resources, and improvement of the educational environment;
- conducting interactive online lessons with the creation of tasks for the online monitoring and evaluation system;
- active use of social networks to solve professional problems of education seekers, resources of network communities of teachers;
- for the development of Smart-technologies and determining the effectiveness of establishing open interaction with various social spheres;
- the application of the principle of "peer-to-peer" education, each teacher who has undergone professional development passes on the acquired knowledge and pedagogical experience to colleagues at his institution and other institutions of higher education;
- development of the content of digital manuals;
- construction of a single platform and creation, management, and distribution of educational content (Huzenko, 2020).

For the effective management of the new education system and the formation of Smart e-learning, the following provisions must be fulfilled:

- 1) a clear strategy of the educational space;
- 2) lifelong professional development of teachers and students;
- 3) creation of Smart pedagogy;
- 4) solving the problem of competencies for the knowledge society;
- 5) to form a generation of educated people;
- 6) promote effective management of the educational system;
- 7) create and update the technical environment.

Currently, the Internet helps the application in the educational space of Internet portals that offer educational materials for free, including online courses from leading teachers. The best free courses that are available for improving the qualifications of specialists in various fields or a specific area are called:

1. Massachusetts Institute of Technology – mit.edu – a project launched by OpenCourseWare University, which offers more than 1,800 free courses for education.
2. Carnegie Mellon University – cmu.edu – offers materials and online courses based on the Open Learning Initiative program.
3. Open University – open.ac.uk – the OpenLearn site provides free access to the university's educational course materials.
4. Tufts University – tufts.edu – the OpenCourseWare university program is available to everyone.

5. Stanford – stanford.edu – one of the world's leading educational institutions, Stanford University has joined Tunes U to provide access to Stanford courses.

For high-quality training of specialists for the higher education system, mobile learning is of great importance, which is considered with the help of mobile devices as e-learning, the use of mobile technology is proposed both jointly and separately with other ICT, regardless of the place and time of the educational process. Such an educational space corresponds most to the idea of Smart-Education, as it is maximally oriented towards conscious independent work because it is created according to the BYOD ("bring your own device") model.

Thus, the application developed for mobile devices and for stationary computers Mobl21 (<http://www.mobl21.com/workflow/>) can ensure the educational process: to allow repeating the learned material, to get advice from the teacher, to provide access to methodical material, etc. To organize the independent work of students, teachers use Mobl21 in offline mode, which helps motivate students to independently search for information, create tests and create video files and podcasts this.

More than 10,000 lectures are presented to education seekers on the mobile application of the TED project. Plickers with the help of cards with QR codes enable teachers to instantly assess the reaction of the audience to the learned program material and allow them to use a maximum of channels to receive educational information (visual, audio, and tactile). This is the beginning of the widespread use of augmented reality elements in the educational process.

The mobile application Google – Classroom, supported in 42 languages, open to everyone, and integrated with the well-known applications Drive and Google Docs, allows you to quickly create and send tasks, and check them online (Harris et al., 2022).

More and more institutions of higher education are using smart technologies for the higher education system for high-quality training of specialists, entering the interactive sphere of mobile learning. With this approach, the teacher is a constant guide of knowledge and a more active mentor in the life of a modern student of education (Kostyria et al., 2023).

Let's consider three e-learning models that exist in the educational space and are necessary for high-quality training of specialists, which was proven during the experiment:

1. "Teacher-directed activity". Educators are provided with educational content that is accessible to all on mobile devices for individual or group completion, in and out of the classroom. The tasks proposed by the teacher are obligatory for students to complete. With this approach, it is mandatory to have your own device.
2. "Teacher-set activity" gives students freedom of action: the proposed tasks can be performed or not performed, because they are additional, not educational, but developmental in nature. Such an e-learning model is focused on supporting the initiative of the learner and motivating cognitive activity.
3. "Autonomous learning activity" emphasizes autonomous, independent educational activity, which means it contributes to practical direction. This model is conducive to self-directed learning. Education seekers independently choose the content to master the educational layer.

LMS (Learning Management System) remains the most popular mobile service for the higher education system for quality training of specialists, the purpose of which is the organization and monitoring of the administration of the educational process as a whole and the use of electronic educational materials. Modular ObjectOriented Dynamic Learning Environment (Moodle) remains the most popular LMS in modern institutions of higher education for quality training of specialists. In the system of higher education, the majority of "Open (network) universities" work on this platform for quality training of specialists. The evolution of forms of communication of people in the Global Network, sameness, and universality as essential properties of LMS, in particular

Moodle, contribute to the innovative transition from LMS systems to the concept of organizing a personal educational environment PLE (personal learning environments) (Podlesnyi et al., 2019).

5. Conclusions

In the Smart society, education is considered as a process using the Internet, smart technologies for the higher education system for quality training of specialists. The goal of Smart-education of the XXI century is written out – the development of skills in the conditions of a digital society, which are necessary for the successful professional activity of specialists; providing an environment that creates competitive specialists due to the high level of development of the skills and knowledge of modern society among students of higher education:

The concept of Smart-education is described, which involves the creation of an intellectual environment for the application of Smart-technologies for the higher education system with the aim of quality training of specialists, and continuous development of phase competencies in participants of the educational process. The technical basis for the implementation of Smart technologies for the higher education system for high-quality training of specialists is represented by a set of devices.

Three main ideas that form the basis of the Smart concept are highlighted. The reason for the actual implementation of Smart-learning is shown (an urgent opportunity to improve the entire existing educational system).

Positions unifying the educational process in the Smart environment are shown, the vision of the Smart-education strategy is presented, and its ultimate goal is described. The organization of feedback, which is an important factor of Smart education, is characterized.

In the process of our search, we conducted a survey of students and teachers of university in order to compare the answers of the respondents and their actual attitude to the implementation of Smart technologies in the educational process.

The main principles of Smart-education and the main components: technological, organizational, and pedagogical are highlighted.

The implementation of Smart technologies in the system of higher education for high-quality training of specialists involves solving such tasks as shown in the article.

The provisions necessary for the effective management of the new education system and the formation of Smart e-learning are described.

Currently, the Internet helps the application in the educational space of Internet portals that offer educational materials for free, including online courses from leading teachers. The best free courses are offered to improve the qualifications of specialists in various fields or in a specific area that are available.

Three models of e-learning that exist in the educational space are considered.

Further research will be aimed at solving the problems of implementing Smart technologies in the higher education system for quality training of specialists.

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The impact of studying the life safety with the basics of labor protection course on the hardiness of future teachers

El impacto de estudiar el curso de seguridad de la vida con los fundamentos de la protección laboral en la resistencia de los futuros maestros


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Abstract

The aim of the research is to determine the impact of studying Life Safety with Basics of Labor Protection course on the hardiness of future teachers (preschool teachers, primary school teachers, middle and high school teachers). The Maddi's Hardiness Survey (adapted by D. Leontyeva and O. Rasskazova) was used as a diagnostic tool, and Pearson's chi-squared test and Student's t-test were used for statistical analysis. It was found that the average hardiness indicators of future teachers – students majoring in Preschool Education, Primary Education and Secondary Education (by specializations) do not statistically differ from each other both before and after studying Life Safety with Basics of Labor Protection. However, studying Life Safety with Basics of Labor Protection has a statistically significant positive impact on the development of hardiness in students of these majors. Therefore, the results of the research can be the ground for improving the professional training of future teachers, who are responsible not only for personal but also for collective safety during the educational process. Prospects for further research are associated with checking the impact of studying safety subjects on the hardiness of students of other educational institutions and students of other majors in peacetime rather than wartime.

Key Words: hardiness, hardiness concept, Life Safety with Basics of Labor Protection course, students of pedagogical majors, threats.

Resumen

El objetivo de la investigación es determinar el impacto de estudiar el curso de Seguridad de Vida con Conceptos Básicos de Protección Laboral en la fortaleza de los futuros maestros (maestros de preescolar, maestros de escuela primaria, maestros de secundaria y preparatoria). Se utilizó la Encuesta de resistencia de Maddi (adaptado por D. Leontyeva y O. Rasskazova) como herramienta de diagnóstico, y la prueba de



chi-cuadrado de Pearson y la prueba t de Student se usaron para el análisis estadístico. Se encontró que los indicadores de rusticidad promedio de los futuros docentes - estudiantes de las carreras de Educación Preescolar, Educación Primaria y Educación Secundaria (por especialidades) no difieren estadísticamente entre sí tanto antes como después de cursar Seguridad de Vida con Fundamentos de Protección Laboral. Sin embargo, estudiar Seguridad de Vida con Fundamentos de Protección Laboral tiene un impacto positivo estadísticamente significativo en el desarrollo de rusticidad en los estudiantes de estas carreras. Por lo tanto, los resultados de la investigación pueden ser la base para mejorar la formación profesional de los futuros docentes, quienes son responsables no solo de la seguridad personal sino también colectiva durante el proceso educativo. Las perspectivas de futuras investigaciones están asociadas con la verificación del impacto de estudiar temas de seguridad en la resistencia de los estudiantes de otras instituciones educativas y estudiantes de otras carreras en tiempos de paz en lugar de tiempos de guerra.

Palabras clave: amenazas, curso de seguridad de vida con fundamentos de protección laboral, concepto de rusticidad, estudiantes de carreras de pedagogía, rusticidad.

1. Introduction

An analysis of current events suggests that rapid scientific and technological progress has not reduced the number of threats to humanity, but has led to their transformation and the emergence of new ones. One of the most striking proofs is the global COVID-19 pandemic and the Russian military invasion of Ukraine. If successful, it would most likely spread to other countries, as even now Russian pro-government channels are broadcasting threats and calls for nuclear strikes against NATO and the European Union. Even before Beck (2006) argued that humanity has now moved to a new phase of its development – a “risk society”: a society facing risks that are almost impossible to predict and correct.

Other experts argue that the former SPOD (stands for steady, predictable, ordinary, definite) world has been replaced by the VUCA (stands for volatility, uncertainty, complexity, ambiguity) world, and after the coronavirus pandemic, by the BANI (stands for brittle, anxious, nonlinear, incomprehensible) world (Chaliuk, 2022).

In such conditions, the role of internal resources of the individual, with hardiness being one of them, is increasing.

The author of the term “hardiness” is Kobasa (1979). In a narrow sense, it means a personal buffer resource against critical life events. In a broader sense, it is a holistic system that combines significant goals and values for the individual, self-adaptation, and behavioral styles determined by attitudes and beliefs about the world, the social environment, and one’s place in it (Chykhantsova, 2018).

It is quite clear that in the current conditions, an important social and pedagogical task is to develop people’s hardiness, in particular, at the stage of professional training. Kobasa and her follower Maddi prove that hardiness is not an innate but an acquired property of an individual (Maddi & Khoshaba, 1994).

In our opinion, it is especially important to develop hardiness in future educators, because they are responsible not only for themselves but also for students who spend a significant part of the day in educational institutions. In Ukraine, this is also the case during air raids and shelling of civilian infrastructure.

2. Literature review

It has become clear that hardiness is a rather complex and multifaceted phenomenon, as it affects the perception of stressful events and overcoming difficult life circumstances (Soderstrom et al., 2000);

manifestations of symptoms of diseases that arise as a result of stress (Kobasa et al., 1982); feelings of happiness and life satisfaction (Chykhantsova, 2021); students' time perspectives (Haghighatgoo & Besharat, 2011); mental endurance and stress resistance in professional activities (Bartone & Hystad, 2010), etc.

Tytarenko and Larina (2009) call hardiness a social necessity and link it to security.

Recent studies have shown that it helps to survive the COVID-2019 pandemic more easily. In particular, people with higher hardiness level show less anxiety and depression caused by the coronavirus pandemic (Bartone & Hystad, 2010). According to Oral and Karakurt (2022), hardiness reduces students' intolerance of uncertainty in a pandemic.

In the context of the Russian military invasion, the authors of this article note the findings on the role of hardiness in wartime.

Khosravi and Namani (2022) prove existence of a relationship between hardiness, self-compassion and family cohesion of women and men affected by war.

According to Miroshnikova (2022), hardiness is an important resource for students during the war calls, which can ensure success despite challenges. Her views coincide with those of Predko (2022), who argues that during wartime students are the most at-risk group, as they are left alone with their problems and fears in the context of distance learning. So, hardiness becomes the only effective mechanism for surviving the current total crisis.

It has also been found that hardiness contributes to better psychological adaptation of internally displaced higher school students (Bereziak et al., 2022).

In view of the above results, it becomes obvious how important the development of hardiness is for the individual, especially in the current difficult conditions. However, the theoretical analysis of the hardiness formation suggests that this process is studied mainly from the perspective of psychology. That is why the vast majority of studies on hardiness development primarily focus on students of psychological majors and professional (psychological) subjects: building hardiness through the use of psychological training; coping strategies for overcoming critical situations, etc. However, building hardiness of other higher school students, in particular, future teachers, remains unexplored. Accordingly, the issue of building hardiness remains unresolved not only in the process of studying special psychological subjects, but also in the process of studying general university subjects, in particular, Life Safety with the Basics of Labor Protection. The subject "Life Safety with the Basics of Labor Protection" consists of two modules: Life Safety and Basics of Labor Protection. We consider each of these modules to be promising in building students' hardiness for the following reasons.

According to the concept of hardiness (Maddi, 2006), the first component of hardiness is the involvement of the individual in life situations. And the basic axiom of life safety is the axiom of potential danger, according to which a person lives in conditions of constant danger (Zerkalov, 2011). At the same time, as mentioned above, human activity has led (and is likely to lead in the near future) to the emergence of new hazards: biological, chemical, radiation, etc. This implies that a person cannot stay uninvolved in dangerous life situations.

The second component of the concept of hardiness is control, which is the belief that one can influence the course of events and act accordingly. The main tasks that life safety solves are: identification of hazards, prevention of identified hazards and behavior in emergency situations (Zerkalov, 2011). When studying

Life Safety, students realize that hazards can be controlled, minimized, and learn how to act in the face of them.

The third component of the concept of hardiness is risk acceptance, and risk is a category of the field of knowledge of life safety. Moreover, one of the concepts of life safety is the concept of acceptable (permissible) risk, which is the understanding that there is no absolute security and the acceptance of the level of security that humanity can accept at this stage of its development (Zerkalov, 2011).

It is also quite obvious that when, for example, a person has gotten under fire, in a crowd or taken hostage, he/she needs to know first of all the rescue mechanism (or increase the chances of rescue) in such a situation. On the other hand, a person who has studied the dangers, ways to prevent or minimize them, and algorithms of behavior in the event of dangers will feel much more confident in a dangerous situation. In addition to the general hazards and risks that potentially threaten every person, there are hazards and risks that threaten professional activities. These are primarily occupational morbidity and occupational injuries, which can be minimized but not reduced to zero. When studying the module "Basics of Labor Protection", future teachers realize how professional activity can affect the quality of life in general and the state of the body in particular, and learn the basics of maintaining professional health and longevity. This is extremely important because teaching often has a negative impact on health. For example, Scheuch et al. (2015) found that educators are prone to hypertension and psychosomatic diseases, and often complain of such health disorders as exhaustion, overwork, headaches, and psychological stress.

Meshko N. and Meshko O. (2018) draw attention to the teachers' susceptibility to diseases caused by voice, visual, informational, nervous overload and insufficient physical activity.

At the theoretical level, the main provisions of life safety and labor protection correlate with the concept of hardiness (Figure 1). According to the concept of hardiness, the conceptual provisions of life safety, and the conceptual provisions of occupational safety and health, a person must be prepared for various adverse (critical) circumstances.

Along with the results of the theoretical analysis, the authors of this article also took into account that in informal communication, students repeatedly noted that after studying Life Safety with the Basics of Labor Protection they realized the inevitability of unfavorable, difficult or critical circumstances in the life of every person, but became more confident about the dangers, risks and threats in different environments.

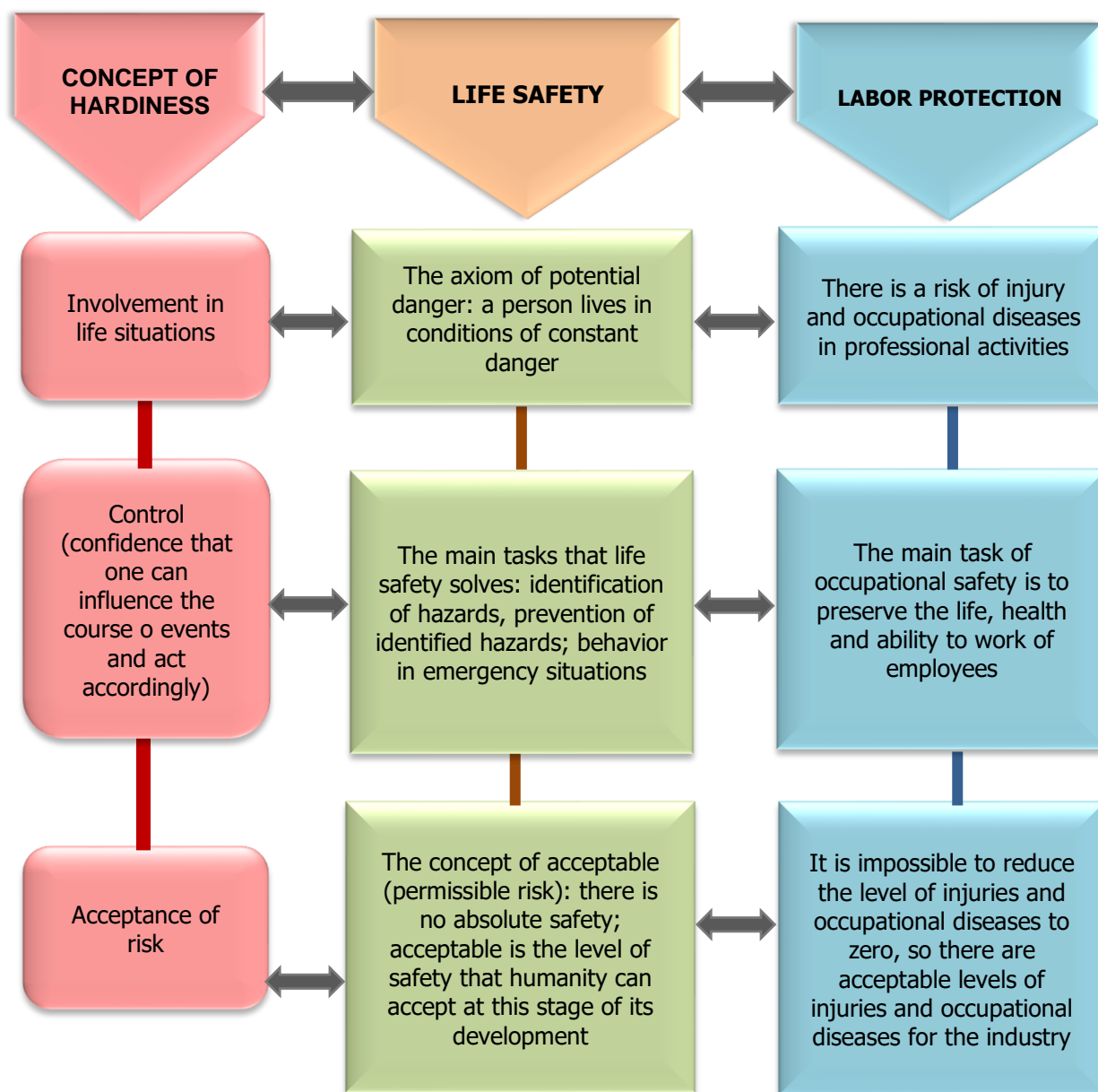


Figure 1. Correlation of the components of the concept of hardiness with the provisions of life safety and occupational safety.

The results of informal communication with students of pedagogical majors after the Russian full-scale invasion on February 24, 2022 were of particular interest for this study. For example, students who had not studied said that when the war began, they felt "fear", "fright", "daze", "numbness", and wondered if they would survive, etc.

On the other hand, students who studied Life Safety with the Basics of Labor Protection said they felt a "desire to escape", remembered "what to do in case of shelling, bombing, chemical attacks, etc.", "which places are the safest (most dangerous)", "how to leave the war zone and what to take with themselves", etc.

Together with the results of the theoretical analysis of this problem, this gave grounds to assume that the study of Life Safety with the Basics of Labor Protection contributes to the increase of students' hardiness.

Hypothesis:

Studying the Life Safety with the Basics of Labor Protection" course has a positive effect on the hardiness of future teachers.

Aim:

Determine the impact of studying the Life Safety with the Basics of Labor Protection course on the hardiness of future teachers (primary school teachers, middle and high school teachers).

3. Material and Methods

Research Design

The research was conducted in several stages. The first – exploratory and theoretical stage (September 2022) provided for a theoretical analysis of literature on the research problem. The second – experimental stage (October 2022 – April 2023) involved the selection of diagnostic technique and its application. The third – generalizing stage (May 2022) involved the analysis of the results, drawing conclusions, as well as providing recommendations for further research.

Participants

The study involved 134 students of pedagogical majors (45 students majoring in Preschool Education, 44 students majoring in Primary Education and 45 students majoring in Secondary Education (by specialization)). There were 106 female and 28 male; the students were in the 1st–4th year of study). The study was conducted during the 2022–2023 academic year (in accordance with the educational programs of their majors and the schedule of classes) at Rivne State University of Humanities and Ivan Franko National University of Lviv.

Instruments

To study hardiness, the authors of this research chose the diagnostic technique Muddi's Hardiness Survey (adapted by Leontiev and Raskazov, 2019). This is a questionnaire of 45 statements with the answer options "no", "rather no", "rather yes", "yes", reflecting such components of hardiness as commitment, control, and risk taking.

Data collection

The respondents' hardiness was diagnosed before and after studying Life Safety with the Basics of Labor Protection course: respondents took the Muddy's Hardiness Survey (adapted by Leontiev and Raskazov, 2019). They marked the selected answers in the questionnaire, and their hardiness indicators were determined (the survey was conducted through Google Form). Next, we the average statistical indicators of hardiness of future teachers were detimined as an arithmetic mean in the following areas: future teachers (Preschool Education), future primary school teachers (Primary Education), and future middle and high school teachers (Secondary Education (by specialization)).

Analysis of data

The normality of a distribution was checked using Pearson's chi-squared test (χ^2) (formula 1), while Student's t-test for the dependent samples was used to assess the significance of the difference (formula 2).

$$\chi^2 = \sum_{i=1}^m \frac{(X_{ei} - X_{ti})^2}{X_{ti}} \quad (1)$$

m – the number of intervals in the sample;
 X_{ei} – the empirical frequencies;
 X_{ti} – the theoretical frequencies;
 Σ – the summation operator.

$$t = \frac{Md}{\sqrt{\frac{\sigma^2}{N}}} \quad (2)$$

Md – the average difference of values;
 σ – the standard deviation of differences;
 N – the number of respondents.

Ethical criteria

The research is based on the principles of academic integrity, respect for the individual, prevention of discrimination on any grounds. All respondents attended classes of the Life Safety with the Basics of Labor Protection course and voluntarily consented to participate in the study anonymously.

4. Results

The following findings were made as a result of applying Muddy's Hardiness Survey (adapted by Leontiev and Raskazov, 2019).

Prior to studying Life Safety with the Basics of Labor Protection, the indicator of involvement in life situations of students majoring in Preschool Education was 35.07; students majoring in Primary Education – 36.14; students majoring in Secondary Education – 38.98.

The indicator of control of students majoring in Preschool Education was 26.09; students majoring in Primary Education – 26.95; students majoring in Secondary Education – 29.02.

The indicator of risk acceptance of students majoring in Preschool Education was 12.05; students majoring in Primary Education – 12.25; students majoring in Secondary Education – 13.70.

Accordingly, the indicator of hardiness of students majoring in Preschool Education was 73.18; students majoring in Primary Education – 75.34; students majoring in Secondary Education – 81.70 (Table 1).

Table 1.

Indicators of students' hardiness before studying Life Safety with the Basics of Labor Protection

<i>Major</i>	Involvement	Control	Risk acceptance	Hardiness
Preschool Education	35.07	26.09	12.02	73.18
Primary Education	36.14	26.95	12.25	75.34
Secondary Education	38.98	29.02	13.70	81.70

The analysis of the data obtained by using Pearson's chi-squared test (Table 2) showed that the empirical values of the indicators of involvement in life situations, control and risk acceptance in particular, and indicators of hardiness in general for the three pedagogical majors are less than the critical values, and, therefore, correspond to the normal distribution law (Table 3).

Table 2.

Analysis of indicators of students' hardiness before studying Life Safety with the Basics of Labor Protection using Pearson's chi-squared test

<i>Major</i>	Involvement		Control		Risk acceptance		Hardiness	
	xc	χ²	xc	χ²	xc	χ²	xc	χ²
Preschool Education	35.07±0.33	0.10	26.09±0.24	0.06	12.02±0.17	0.03	73.18±0.44	0.19
Primary Education	35.14±0.14	0.02	26.95±0.32	0.01	12.25±0.14	0.01	75.34±0.20	0.04
Secondary Education	38.98±0.32	0.10	29.02±0.30	0.10	13.70±0.28	0.09	81.70±0.51	0.28

Table 3.

Assessment of the normality of the distribution of indicators of students' hardiness before studying Life Safety with the Basics of Labor Protection

Indicators of viability	Involvement	Control	Risk acceptance	Hardiness
Pearson's chi-squared test	0.22	0.17	0.13	0.51
Significance level	0.05<p<0.95	0.05<p<0.95	0.05<p<0.95	0.05<p<0.95

This means that the hardiness of future preschool teachers, future primary school teachers, and future middle and high school teachers before studying Life Safety with the Basics of Labor Protection is not statistically different.

Re-application of Muddy's Hardiness Survey (adapted by Leontiev and Raskazov, 2019) after studying Life Safety with the Basics of Occupational Safety showed that the indicator of involvement in life situations of students majoring in Preschool Education was 43.04; students majoring in Primary Education – 44.07; students majoring in Secondary Education – 47.04.

The indicator of control of students majoring in Preschool Education" was 31.98; students majoring in Primary Education – 32.05; students majoring in Secondary Education – 34.07.

The indicator of risk acceptance of students majoring in Preschool Education was 16.95; students majoring in Primary Education – 17.07; students majoring in Secondary Education – 19.13.

Accordingly, the indicator of hardiness of students majoring in Preschool Education was 91.97; students majoring in Primary Education – 93.19; students majoring in Secondary Education – 100.24 (Table 4).

Table 4.
Indicators of students' hardiness after studying Life Safety with the Basics of Labor Protection

<i>Specialty</i>	Involvement	Control	Risk acceptance	Hardiness
Preschool Education	43.04	31.98	16.95	91.97
Primary Education	44.07	32.05	17.07	93.19
Secondary Education	47.04	34.07	19.13	100.24

After studying Life Safety with the Basics of Labor Protection, all indicators of hardiness increased. In general, the hardiness of students majoring in Preschool Education increased by 18.79 (by 25.68%); students majoring in Primary Education – by 17.85 (by 23.69%); students majoring in Secondary Education – by 18.54 (by 22.69%) (Table 5).

Table 5.
Increase in students' hardiness after studying Life Safety with the Basics of Labor Protection

<i>Major</i>	HARDINESS			
	Before studying Life Safety with the Basics of Labor Protection	After studying Life Safety with the Basics of Labor Protection	Increase	Increase in %
Preschool Education	73.18	91.97	18.79	25.68 %
Primary Education	75.34	93.19	18.79	23.69 %
Secondary Education	81.70	100.24	18.54	22.69 %

The analysis of students' hardiness indicators after studying Life Safety with the Basics of Labor Protection according to Pearson's chi-squared test (Table 6) showed that the empirical values are less than the critical values. Therefore, there is compliance with the normal distribution law (Table 7).

Table 6.
Analysis of indicators of students' hardiness after studying Life Safety with the Basics of Labor Protection using Pearson's chi-squared test

<i>Major</i>	Involvement		Control		Risk acceptance		Hardiness	
	xc	χ²	xc	χ²	xc	χ²	xc	χ²
Preschool Education	43.04±0.24	0.06	31.98±0.14	0.02	16.95±0.17	0.03	91.97±0.20	0.04
Primary Education	44.07±0.10	0.01	32.05±0.10	0.01	17.07±0.14	0.02	93.19±0.32	0.11
Secondary Education	47.04±0.33	0.12	34.07±0.24	0.06	19.13±0.32	0.11	94.81±0.48	0.25

Table 7.

Assessment of the normality of the distribution of students' hardiness indicators after studying Life Safety with the Basics of Labor Protection

Indicators of viability	Involvement in life situations	Control	Risk acceptance	Hardiness
Pearson's chi-squared test	0.19	0.09	0.16	0.43
Significance level	0.05<p<0.95	0.05<p<0.975	0.05<p<0.95	0.05<p<0.95

As the indicators of hardiness before and after the study of Life Safety with the Basics of Labor Protection corresponded to a normal distribution, the Student's t-test was chosen for the dependent samples (because the respondents were the same) to analyze the statistical significance of the change in hardiness indicators. As a result, the change in hardiness indicators was found statistically significant (Table 8).

Table 8.

Analysis of the change in students' hardiness indicators before and after studying Life Safety with the Basics of Labor Protection using Student's t-test

Indicators of viability	Involvement	Control	Risk acceptance	Hardiness
Student's t-test	199.75	19.81	26.63	131.00
Significance level	p<0.001	0.001<p<0.01	0.001<p<0.01	p<0.001

So, it was found that the average indicators of hardiness of future teachers – students majoring in Preschool Education, Primary Education and Secondary Education (by specialization) do not differ statistically both before and after studying the Life Safety with the Basics of Labor Protection course. However, the study of the Life Safety with the Basics of Labor Protection course has a statistically significant positive impact on the development of hardiness of students of these majors.

So, the advanced hypothesis was confirmed.

5. Discussion

Authors' view of the importance of the role of hardiness in the face of current hazards is consistent with the findings of Kuzikova et al. (2021), who argue that the current reality is uncertainty and instability. So, hardiness plays a significant role not only in a personal but also in a professional context. This is supported by Reupert's (2020) opinion about changes and the need for adaptation to the new norms in the context of the COVID-2019 pandemic, which was called unprecedented, extraordinary and unique.

The views of Tu et al. (2020) on the unlikelihood of the COVID-19 pandemic as the last health crisis are relevant in the context of the current reality, as there have been 7 such crises in the world over the past 20 years.

In this context, Meltem and Karakurt (2020) conclude on the need to introduce hardiness education programs for undergraduate students in the context of the COVID-19 pandemic.

Our conclusions that the vast majority of studies on hardiness building are currently focused primarily on psychology students and related (psychological) majors correlate with the results of the study by Matušů

(2020). According to it, the hardiness of future teachers is significantly lower than the hardiness of future psychologists.

The results complement the findings of other researchers on the role of hardiness for teachers in the context of preventing their professional burnout (Azeem, 2010; Chan, 2003); emotional control (Kokun, 2021; Azarian et al., 2016); stress resistance (Opeyemi, 2016; McCalister et al., 2006); impact on job satisfaction (Jarvis, 1993), etc.

It was established that not only the emotional component, which is primarily realized through hardiness training or the development of coping strategies. The content of training on safety in the social and professional environment also plays an important role in building students' hardiness. This is consistent with the views of Karpova and Gvozdi (2019) on the role of the content of security subjects in the training of future specialists.

The theoretical significance of the study is substantiated correlation between the main provisions of life safety and labor protection and of hardiness.

The practical significance of the study is proved statistically significant positive impact of studying the Life Safety with the Basics of Labor Protection course on the development of future teachers' hardiness.

The originality of the study. The authors of this research are the first to identify the connection between the study of the Life Safety with the Basics of Labor Protection course and the development of future teachers' hardiness highlighted. We assume that the study of other safety subjects also has a positive effect on the hardiness of future professionals, in particular, of other majors.

As the development of hardiness of future teachers is not one of the goals of studying the Life Safety with the Basics of Labor Protection course, as evidenced by the analysis of relevant educational programs, we consider the obtained results significant.

6. Limitations

Despite the statistical significance of the results, we are convinced of the need for a larger-scale test of how the study of Life Safety with the Basics of Labor Protection course affects the development of future teacher's hardiness. We associate this need, first, with the novelty of the obtained results and with the impossibility of comparison with similar results. Second, this is associated with the fact that the Life Safety with the Basics of Labor Protection course for pedagogical majors has been taught relatively recently, and therefore is still insufficiently developed. The result of its study by students largely depends on the teacher's professional competence. Third, the study was conducted in wartime, when the problem of security is of paramount importance. So, students could have a higher motivation to study security subject than in peacetime.

7. Conclusions

The results of the study confirm the validity of the advanced hypothesis and give grounds to assert the following.

Human hardiness is a complex and multifaceted phenomenon that determines the quality of life and plays a key role in difficult or critical conditions.

The basic provisions of life safety, occupational safety and hardiness are conceptually correlated, but their methodological implementation in the training of future specialists is different. The implementation of the

basic provisions of life safety and labor protection, in particular, when teaching Life Safety with the Basics of Labor Protection is fundamental under a knowledge-based approach. It implies that a person cannot adapt to difficult conditions and preserve life, health and performance if he or she does not know how to act correctly. And the psychological approach prevails in building personality hardiness: a person must be psychologically ready for difficult conditions.

It was experimentally proved that studying the Life Safety with the Basics of Labor Protection course has a positive effect on the hardiness of students of pedagogical majors (future preschool teachers, primary school teachers, middle and high school teachers) and this effect is statistically significant.

The obtained results can be the ground for improving the professional training of future teachers – specialists responsible not only for personal but also for collective safety during the educational process. This is relevant both for Ukraine in the context of the Russian invasion, and for the entire democratic world in the context of the existence of totalitarian regimes on the planet, which is a source of potential global dangers.

Prospects for further research are related to testing the impact of studying security subjects on the hardiness of students of other educational institutions and students of other majors in peacetime, not wartime.

Conflict of interest

The authors declare that there is no conflict of interest.

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Enhancing the professional competencies of future teachers through practice in schools

Mejorar las competencias profesionales de los futuros docentes a través de la práctica en las escuelas


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Abstract

The article aims to explore the development of professional competencies in future teachers through school practice, focusing on its effectiveness. Employing methods such as observation, comparison, and performance coefficient calculations, along with the Whitney-Wilk criterion, the study achieved its objective. It found that practical skill acquisition during school practice is highly effective (42%), enhancing understanding of teaching methods. The authors propose four learning mechanisms to adapt theoretical materials to practical education systems and introduce innovative lesson organization approaches. Interactive technology use in education was facilitated through LearningApps.org, Mova, Mozaik applications, improving communication between learners and instructors. These mechanisms significantly boosted efficiency in future Ukrainian language teachers (64%) and Chemistry/Natural Science teachers (60%). The study results indicate that student skills in independence and innovative thinking were notably developed, impacting the teacher's ability to provide linguistic and communicative functions. This study's



practical significance lies in its efficient mechanisms that aid future teachers in acquiring practical skills during school practice, reflected in the overall efficiency of trainees across junior, middle, and senior grades.

Keywords: adaptation of theoretical materials, communication with learners, differentiation, individualization, innovative approach.

Resumen

El objetivo del artículo es investigar el desarrollo de competencias profesionales en futuros docentes a través de la práctica escolar, enfocándose en su efectividad. Utilizando métodos como observación, comparación y cálculos de coeficientes de rendimiento, junto con el criterio de Whitney-Wilk, el estudio alcanzó su objetivo. Se encontró que la adquisición de habilidades prácticas durante la práctica escolar es altamente efectiva (42%), mejorando la comprensión de los métodos de enseñanza. Los autores proponen cuatro mecanismos de aprendizaje para adaptar materiales teóricos a sistemas prácticos de educación e introducir enfoques innovadores en la organización de lecciones. El uso de tecnología interactiva en la educación se facilitó a través de aplicaciones como LearningApps.org, Mova y Mozaik, mejorando la comunicación entre alumnos e instructores. Estos mecanismos aumentaron significativamente la eficiencia en futuros docentes de lengua ucraniana (64%) y docentes de Química/Ciencias Naturales (60%). Los resultados del estudio indican que se desarrollaron notablemente habilidades de independencia y pensamiento innovador en los estudiantes, impactando en la capacidad del docente para proporcionar funciones lingüísticas y comunicativas. La importancia práctica de este estudio radica en sus mecanismos eficientes que ayudan a los futuros docentes a adquirir habilidades prácticas durante la práctica escolar, reflejado en la eficiencia general de los practicantes en niveles junior, medio y senior.

Palabras claves: adaptación de materiales teóricos, comunicación con los estudiantes, diferenciación, individualización, enfoque innovador.

1. Introduction

The development of professional knowledge among prospective educators ought to be rooted in a deliberate methodology that fosters the acquisition of practical skills. The process of training should be integrated into professional activity to cultivate educators of exceptional skill. Achieving this objective necessitates the organization of practical classes for students to gain the necessary experience directly in educational institutions. This approach enables competitive professionals to demonstrate the relevance of their chosen research topic.

The development of students' professional competence through practice in schools of prospective teachers contributes to training a specialist who is focused on innovations in the labor market (Essalih et al., 2023). Accordingly, this is related to the possibility of forming flexibility in students and adaptation to dynamic changes. Lane and Sorby (2022) hold that since the development of practical skills is aimed at finding independent solutions for conducting classes, the format of teaching and learning, so while carrying out their professional tasks, future teachers ensure the development of practical skills due to the individualization of education. Students during their practice should autonomously resolve problematic situations that arise during their lesson, thereby fostering a personalized approach to comprehending practical information (Silva et al., 2023). At school sessions, students modify their means of conveying information and devise novel educational frameworks that subsequently impact their comprehension of the importance of specific assignments. In such a way, students can consolidate the acquired theoretical knowledge in practice, which facilitates the understanding of approaches to their utilization. This method contributes to strengthening of students' proficiency.

The direct acquisition of practical skills among school learners fosters the development of active thinking. As a result, this enables the generation of novel ideas while promoting freedom in decision-making (Kurz, Piva & Bedin, 2019). The approach holds a favorable meaning not only for the prospective instructor, but also for learners with innovative thinking. The utilization of differentiation techniques in education can lead to attaining an elevated level of professional proficiency. Given the above, differentiation pertains to segmenting the pedagogical process into constituent elements. According to Kolesnik et al., (2023), this can be realized due to the distribution of approaches to the presentation of theoretical information for the learners. This can be manifested in the creation of trainee groups to master a separate topic. In this connection Petrovych et al. (2021) maintain that focusing on further discussion in the classroom and the prospective teacher's search for more specialized information that is not in the textbook fosters professional self-improvement of prospective educators, intended to explore novel avenues for their career advancement. As noted by Silva, Silva and Bilessimo (2020), engaging in school-based practice enhances the ongoing education of prospective teachers and facilitates the attainment of more proficient expertise by providing insight into authentic teaching methods.

Upon studying the theoretical material, it was discerned that engaging future educators in practical experiences within schools is a prevalent approach. This method aims to enhance the quality of education and cultivate a comprehensive understanding of the school education system during the training process for prospective teachers. However, examining approaches to the adaptation of learning mechanisms in schools, the development of appropriate methods is not sufficiently disclosed. Hence, the objective of the current study is to discern the most advantageous methodologies for cultivating the professional competencies of prospective teachers via practical experience in academic institutions while considering the efficacy of the school learners' education.

The objectives of the present study were as follows:

- to determine the most favorable approach to ensure the acquisition of practical knowledge by pre-service teachers;
- to develop training mechanisms that will ensure the training of pre-service teachers in the Ukrainian language and Chemistry / Natural science;
- to evaluate the efficacy of the implemented training protocols for pre-service teachers and their learners who have undergone instruction in Ukrainian language and Chemistry / Natural science;
- to reveal the formed skills of pre-service teachers' professional competence as a result of observation during the educational process.

2. Literature Review

From the contemporary perspective, it is feasible to ensure the use of academic and vocational training for the future teachers to acquire practical skills. The pedagogical methodology facilitated the formation of self-esteem among prospective educators, as well as enhancing their analytical faculties towards a descriptive-interpretative disposition. According to Martins et al., (2023), the aforementioned approach to learning is an enriching experience that is reflected in the development of professional skills. The development of professional competences during training is of crucial importance for sustainable development during hands-on professional activity. Moreover, it is indispensable for future teachers' formation of professional competences and development of their motivation. The findings indicate that primary school educators exhibit greater proficiency in social and substantive domains, but are less adept in pedagogical expertise. Nonetheless, the favorable impact on cultivating professional competencies facilitates the enhancement of practical skills (Ammonet, Turek & Peter, 2022). Enhancing the preparation of future educators can be accomplished by fostering hands-on competencies via incorporating the fundamental principles of professionalism in educational institutions. This will facilitate the cultivation of critical thinking skills among prospective teachers, enabling them to scrutinize their pedagogical practices

and assess their efficacy. During the training period, future teachers can acquire knowledge and skills to foster personal growth; the prospective educators will also understand approaches to the development of professional and creative activity (Arbia et al., 2021).

Having probed into the conventional method of preparing prospective educators, certain competencies proved challenging to attain. The findings stem from a study involving 25 instructors, where it was deduced that insufficient pedagogical skills were obtained during their professional endeavors. As emphasized by Aktan, Toraman and Koşan (2021), the knowledge acquired at universities proved insufficient in instilling the necessary managerial aptitudes. The selected system of training future teachers has a direct impact on the students' performance level. To enhance the proficiency of prospective educators, it is imperative to reconsider pedagogical approaches. Simultaneously, significant emphasis must be placed on comprehending the fundamentals of educational process management and fostering teacher autonomy. Urbani (2020) maintains that instruction should prioritize cultivating both formal and informal competencies that will facilitate the learning experience. In order to attain an elevated standard of professionalism, prospective educators must be granted the opportunity to instruct within educational institutions. To facilitate this process, significant emphasis should be placed on refining pedagogical methodologies, enhancing learning modalities and optimizing evaluative techniques. Management strategies ought to concentrate on inspiring the trainees in their academic pursuits - an approach that according to Sabbah et al., (2022) can positively impact the feasibility of integrating digital technologies into the teaching and learning experience.

Employing a creative approach in education fosters the cultivation of vocational expertise and pedagogics. Such an approach facilitates the development of professional skills and didactics. This methodology enables the cultivation of ingenuity, development of pedagogic identity, as well as personal advancement. A creative approach to learning engenders a sense of autonomy, enhances introspection and communication (Meltzer & Schwencke, 2020). Prospective educators must cultivate their creative abilities, attain fundamental literacy, and understand the principles of the learning environment. Drawing from the insights of instructors who have utilized goDesign software, it is feasible to guarantee an exploration for novel approaches in delivering hands-on classes. The use of innovative methods will ensure successful training, focusing on the development of professional competencies (Wright et al., 2020).

A critical takeaway from the conducted literature review made it possible to determine that for the development of professional competencies of prospective teachers it is imperative to prioritize the possibility of using interactive technologies. However, the issues of ensuring future teachers' participation in the educational process at school are addressed by the scholars superficially, excluding the description of particular mechanisms.

3. Methods

Research Procedure

Throughout the present study, the authors distinguished three principal stages. The first stage of the research consisted in comparing different approaches to the acquisition of practical skills by prospective teachers. Among the approaches, the division into the following subsequent groups:

- acquisition of practical knowledge in the conditions of classroom sessions;
- acquisition of practical knowledge in the classroom with further consolidation in schools during pedagogical practice;
- acquisition of practical knowledge mainly in classrooms (70%) and partially during the pedagogical practice (30%);
- acquisition of practical skills in schools.

An evaluation was conducted to determine the efficacy of four different learning methodologies implemented throughout the academic year among prospective educators, who were subjected to these pedagogical approaches. Based on the established results, the second stage consisted in creating learning mechanisms for students to acquire practical skills directly in school institutions. The mechanisms were aimed at future teachers of the Ukrainian language, Chemistry / Natural Science teachers for instructing junior, middle and high school students, which entailed the participation of prospective educators in instructing students at the primary, intermediate, and secondary levels. The mechanisms were aimed at the development of professional competencies of future teachers, in which a greater emphasis was placed on the development of linguistic and communicative competencies, since they enable prospective educators to deliver accurate educational information presentations for effective student learning. They are also aimed at receiving feedback from teachers, which contributes to the continuity of learning and students' understanding of a particular topic. The training program spanned a duration of four months during the year 2023.

The third stage of the research consisted in determining the overall effectiveness of training, the relationship between the level of acquired knowledge of prospective teachers as well as their learners of different grades. At this stage of the research, limitations that may arise in prospective students' learning during practice in schools, were determined. Furthermore, an assessment was conducted to ascertain the proficiency level in professional competencies among prospective educators.

Formation of the Sample

Various cohorts of participants were engaged in the research. Cohort 1 (consisting of 56 individuals) comprised prospective teachers specializing in diverse areas, who conducted practical classes in schools. Cohort 2 (consisting of 127 individuals), comprised learners from grades 4 to 10. Their lessons were conducted by prospective teachers and they had undergone this form of instruction for a year alongside the first cohort. The study's prerequisite was that all participants must have completed their training through practical experience in schools across diverse grades of learners.

The second category of respondents comprised students (prospective teachers) and learners who had previously undergone traditional schooling. Cohort 3 was composed of 154 students who graduated from the Balta Pedagogical College, Ternopil National Pedagogical University named after Volodymyr Hnatyuk, and Volyn National University. Further, cohort 4 consisted of junior (3-4 grades; 67 individuals), middle (7-9 grades; 83 individuals), and senior (10-11 grades; 80 individuals) school learners. The sample size for this category was limited due to the lack of students gaining practical knowledge directly in school classrooms. Also, the learners involved in the study were to be enrolled in schooling in accordance with the traditional education system. All learners, as well as their parents gave written consent to participate in the study.

Methods

The value of a particular approach to learning for the performance of future teachers and learners was based on the use of a general theoretical observation method (Hyseni Duraku et al., 2022). The comparative approach facilitated the identification of the theoretical strengths and weaknesses inherent in each of the suggested methodologies (Ortogero, Barcarse & Ray, 2022). The performance of students and learners of different grades due to the implementation of a distinct methodology for attaining practical skills by future teachers was also compared. The results were obtained from the analysis of university and school data obtained after a year of training, based on various methodologies utilized in the study.

The development of learning mechanisms provided for the opportunity for prospective teachers to acquire practical knowledge during school classes. The mechanisms were aimed at the possibility of studying the

Ukrainian language and Chemistry / Natural science for learners of junior, middle, and senior school grades. The development of learning mechanisms was based on the identification of the most effective learning approaches drawing upon evaluation of current educational frameworks (Palacios Ortega, Pascual & Moreno, 2022; Myrzatayeva, Almetov & Tazhmukhanova, 2023; Ventista & Brown, 2023; Perrotta, 2023). According to the methodology of Palacios, Pascual and Moreno (2022) provided for the use of STEM technologies, the method of Myrzatayeva, Almetov and Tazhmukhanova (2023) was based on the development of critical thinking, which involved the use of system integration to develop the individual's potential. Drawing upon the methodology of Ventista and Brown (2023), when developing practical skills, it is expedient to focus on both systematic development and professional development. Perrotta's (2023) system is intended to provide ambitious education, which facilitates focusing on the content of the curriculum, the development of research skills. That being said, to implement learning mechanisms, it was also indispensable to involve digital technologies such as LearningApps.org, Mova, Mozaik. With that in mind, to select digital technologies, the functionality of 30 applications was thoroughly examined, which made it possible to choose the most effective ones for the proposed training system.

To address the research objectives, corresponding calculations were made to determine the correlation between the level of attained knowledge of prospective teachers and their learners. Determining the level of practical knowledge gained by the pre-service teachers became possible as a result of calculations of the prospective teachers' effectiveness coefficient, which was elaborated by the authors of the present article (Formula 1):

$$p_t = \frac{r_i + y_i + h_i}{r_i(m-1)}, \quad (1)$$

r_i – the level of variation of theoretical information in practice;

y_i – level of communication with learners;

h_i – the level of creativity in conducting classes;

m – the overall level of attainable knowledge.

To determine the level of knowledge attained by the prospective teachers, their learners' performance coefficient was calculated. The coefficient was elaborated by the authors of the present article (Formula 2):

$$k_l = \frac{(f_i + g_i) \times l}{p_{ov}}, \quad (2)$$

f_i – assessment for understanding the subject;

g_i – homework assessment;

l – diligence coefficient (equalling from 0.1 to 0.3);

p_{ov} – overall performance indicator.

The gaps in the proposed methodology were identified through the examination of the educational system by prospective teachers, thereby enabling the development of strategies to bridge them. Moreover, the observation skills made it possible to identify formed professional competences among future teachers. The level of professional competences was determined as a result of a comparison of learners' primary skills and those acquired after training.

Data Analysis

To confirm the obtained results and the possibility of conducting an accurate analysis thereof during the study, statistical calculations of the Whitney-Wilk test were carried out (Du Plessis et al., 2023) (Formula 3):

$$U = n_1 \times n_2 + \frac{n_x \times (n_x + 1)}{2} - T_x, \quad (3)$$

n_1 и n_2 – critical parameters of calculated indicators;
 n_x – number of criteria for calculation;
 T_x – the reliability of the criteria determined in the table.

The ratio of the criteria will be observed if the calculated indicators are less than the values in the table. If the calculated indicators are lower than the values in the table, in such case they are characterized by the established ratio between them. However, it should be taken into account that the smaller the calculated value of the criterion, the higher the probability that the calculated indicators do not correlate with each other.

Ethical Criteria

The research was based on compliance with ethical standards in accordance with The Norwegian National Committee for Research Ethics in Science and Technology (2016). The authors confirm the provision of equal conditions for all study participants, which were agreed at the beginning. In accordance with ethical norms, it was intended to preclude any potential infringement upon the interests of all research participants. The authors confirm that these participants gave written consent to participate in the study.

4. Results

At first, the most efficacious approaches for acquiring practical skills were distinguished. The research aimed to ascertain how a specific approach influences information perception and attainment of appropriate levels of knowledge (Table 1).

Table 1.

The effectiveness level of different approaches to learning to attain practical skills

Variety of learning approaches	Value of learning approach	Performance of future teachers, scores	Performance of learners	Variety of attained professional competencies
Acquisition of practical knowledge in the classroom	9%	3.7	-	Advancement of memory, creative approach
Acquisition of practical knowledge in the classroom with further consolidation in schools during pedagogical practice	18%	3.9	4.2	Logical thinking, memory advancement
Acquiring practical lessons mainly in classrooms (70%) and partially in practice (30%)	31%	4.3	4.4	Logical thinking, communication, management skills
Acquisition of practical skills in schools	42%	4.7	4.6	Independence, creativity, enhancing comprehension of the authentic pedagogical framework.

It was established that the most expedient approach to attaining practical skills is to ensure the study of practical skills directly in school institutions. The advantage of the said approach is related to the possibility to ensure active interaction of future teachers with their learners, which expands to a comprehensive understanding of pedagogical methodologies. The above approach contributes to the inseparability of the educational process with real professional activity. This makes it possible to ensure the integration of the educational process into the existing pedagogical system, focusing on purposefulness, self-actualization, and socialization of students. Furthermore, it ensures the development of individuality of future teachers for professional activities. From this perspective, conducting practical classes in schools has a comparatively greater effectiveness both for prospective teachers as well as for their learners. This is attributable to the potential for transformation and diversification of the pedagogical process, which manifests in the alteration of the educational framework. For instance, when learning a language, trainees can perceive different approaches to learning, which is reflected in their engagement.

The authors believe that the acquisition of practical skills by prospective teachers primarily in the academic setting (70%) and partially in practice (30%) has numerous advantages over academic instruction only. The results are related to the possibility of immersion in the real educational process, which allows to expand the idea of pedagogical activity. Furthermore, conducting partial practical classes at school will enable future teachers to consolidate their understanding of theoretical concepts and explore novel strategies for addressing specific problems. Consequently, conducting practical classes in the classroom has the least effectiveness, since future teachers do not understand the very mechanisms of practically implementing the process of conducting classes. Moreover, it precludes any means of engaging in discourse with students, leading to a lack of comprehension when attempting to tackle some specific issues. While situational modeling can be ensured during in-person instruction, devising effective solutions may prove divergent from theoretical approaches.

Gaining relevant expertise in classroom instruction augmented by practical application during pedagogical training yields benefits over traditional classroom-only learning. However, this educational approach fails to guarantee a practical comprehension of any given subject matter. This deficiency is manifested in the overall grasp of teaching fundamentals within the school system. The efficacy of this approach is limited as it solely fosters a general comprehension of the pedagogical process, failing to facilitate an in-depth understanding of the intricacies involved in learning. Furthermore, students' academic performance may significantly deteriorate as they engage in pedagogical practice, which can divert their attention from the subject matter. Similarly, during the adaptation phase, students may encounter distractions that impede their ability to effectively structure lessons owing to a dearth of practical knowledge on the topic at hand.

Since in the conditions of the first stage of the research it was established that the development of practical competences has the greatest effectiveness as a result of school practice. As per findings of the initial stage of the study, it was determined that practical competencies yield maximum efficacy through school-based practice. Therefore, the second stage of the research involved the development of mechanisms to ensure the possibility of learning practical skills in schools. The said mechanisms were aimed at training future Ukrainian language teachers and Chemistry/Natural science teachers. In order to elicit high-quality results from learners, it is imperative to establish a channel of communication between the instructor and a learner. Therefore, the focus in devising mechanisms was geared towards fostering linguistic and communicative proficiency (Figure 1).

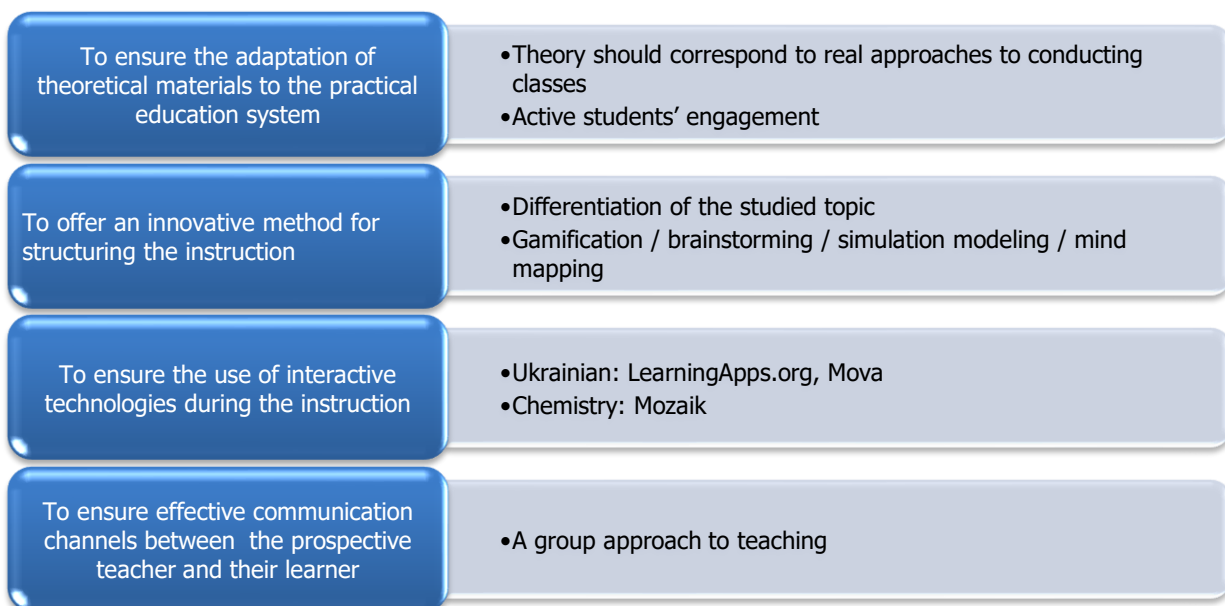


Figure 1. Mechanisms for training future teachers for the development of professional competencies, including linguistic and communicative.

With all the mentioned aspects, it cannot be denied that in order to enable the development of practical professional competences of future teachers, first and foremost it is necessary to ensure the adaptation of theoretical materials to the practical system of education. The theoretical material presented in classrooms should clearly correspond to real approaches to conducting lessons. The study of the theory should be based on the search for more detailed and in-depth information. This will foster gaining more professional knowledge, delving deeper into the existing laws and exceptions in the Ukrainian language or in Chemistry / Natural science. Consolidation of theoretical knowledge should draw upon the active involvement of the trainees, which opens up opportunities for independent learning. Furthermore, it is expedient to ensure the development of interpersonal relationships, which will allow the elaboration of group work principles. Accordingly, this is aimed at the development of language and communication competence, since the presence of a theoretical base will allow to ensure productive communication between learners and teachers.

Before commencing to acquire professional skills in practice, future teachers should determine an extraordinary approach to the organization of lessons. This will make it possible to form learners' interest in studying the material and ensure compliance with linguistic and communicative competence. The learning process can be based on differentiation regarding the study of a specific topic. This can consist of dividing a single topic into additional subtopics that can be studied by different groups of learners. During the training process, it is feasible to implement a gamified approach that can effectively identify a select cohort of learners who achieved a more profound understanding of the subject matter. Moreover, it is expedient to ensure the possibility of visualizing the learned information, for instance displaying experiments in Chemistry or studying the rules of the Ukrainian language. This will also allow students to develop their thinking and creativity as a result of adapting the source information to an innovative learning approach. A lesson rooted in fantasy has the capacity to enhance the trainees' engagement with learning, thereby promoting their comprehensive understanding of a specific issue. Simulation modeling will allow to provide individualization in the subject for the study of the problem-oriented tasks. Such lessons are bound to form the extraordinary thinking of learners and students who have to respond professionally to the former questions, thus enhancing their competence or practice mind-mapping which is an interactive way

to learn information. The process is based on the memorization of a specific topic due to the creation of interactive approaches that are better perceived by learners in a video image than in spoken words.

Future teachers should be provided with the possibility of conducting lessons with the help of interactive technologies. Digital technologies can serve as a means for both the acquisition of theoretical knowledge and the facilitation of hands-on instruction. It is expedient to ensure the use of the most relevant technologies, which will allow to eliminate problems in education, will ensure intrapersonal connections. Furthermore, digital technologies will make it possible to form an inseparable connection between future teachers and students to master certain topics, practising communication skills, receiving feedback. Digital technologies should eliminate tension in learning, and be aimed at activating thinking, individualizing learning. Given the above, it is feasible to ensure the use of the interactive resource LearningApps.org while learning the Ukrainian language. The resource is aimed at the possibility of creating interactive tasks, which help to conduct classes in a gamified format. The digital resource contributes to the consolidation of knowledge and the formation of engagement in learning. Using the Mova application will allow perceiving the rules of spelling, study idioms, synonyms, exceptions to general rules, etc. The study of Chemistry can be based on the use of the Mozaik software complex, which allows learners to focus on digital and 3D lessons. The application allows the use of various tools for creating lessons, screening videos and educational images, which contributes to the visual perception of the subject.

By adopting a group-oriented approach during classes, it is feasible to facilitate communication between learners and their instructors. This can be manifested in the discussion with the teacher of a relevant topic that forms the linguistic and communicative competence of future teachers. Additionally, providing a personalized approach to each student, discussing the topic with each student will allow the prospective teachers to form a strong bond. Consequently, this will allow students not to be afraid to seek for help from their instructors when solving individual tasks. Further, the participants of the educational process will freely express their opinion, which will assist in increasing the effectiveness of the educational process.

Further, the work determined the relationship between the level of acquired knowledge of students and learners of junior, middle, and senior grades. The results were obtained as a result of calculating the training effectiveness coefficients of future teachers and learners. Calculations of the Whitney-Wilk test were used for comparison (Table 2).

Table 2.
Training effectiveness of teachers and learners of different grades after the practice

Indicator of the attained knowledge level	The attained knowledge level of future teachers of the Ukrainian language	The attained knowledge level of future teachers of Chemistry/ Science	Junior learners		Middle school learners		Senior learners		U (0,4920 – tabular value)
			Ukrainian	Science	Ukrainian	Chemistry	Ukrainian	Chemistry	
High	0.75 (64%)	0.73 (60%)	0.6 (57%)	0.57 (46%)	0.58 (47%)	0.54 (48%)	0.6 (53%)	0.53 (43%)	0.1389
Sufficient	0.6 (31%)	0.61 (34%)	0.43 (35%)	0.44 (44%)	0.41 (42%)	0.48 (38%)	0.43 (39%)	0.41 (47%)	0.1926
Average	0.52 (5%)	0.48 (6%)	0.31 (8%)	0.33 (10%)	0.37 (11%)	0.32 (13%)	0.39 (8%)	0.36 (10%)	0.2375
Low	-	-	-	-	-	0.21 (1%)	-	-	-

It was established that after completing the school practice, future teachers of the Ukrainian language and Chemistry / Natural science were mostly able to achieve a high level of knowledge. This is related to the acquisition of the necessary professional skills as a result of conducting practical classes during the pedagogical school practice. Students were able to acquire knowledge on the intricacies of educational process administration, understood the mechanisms of interpersonal communication among students to facilitate the facilitation of instructional sessions. Moreover, during practical classes, students were able to vary the acquired theoretical knowledge, which affected the quality of the educational process. Accordingly, high scores were obtained by the majority of schoolchildren as a result of ensuring a well-thought approach to learning. The use of digital technologies allowed the learners to achieve the highest level of knowledge. The most advanced comprehension of the Ukrainian language was achieved by students in the lower grades. This allowed students to master the softening consonant sounds, the spelling of prefixes. During their studies, schoolchildren also gained knowledge regarding word formation, which allowed them to correctly parse words according to their structure (e.g., determining the root, ending, etc.). Middle school students achieved knowledge of the Ukrainian language and Chemistry at an almost equally high level. High school students achieved the highest results when composing dialogues, which was reflected in the correct construction of sentences. The students also gained knowledge about the correct use of punctuation marks in dialogue. While studying Chemistry, students gained the highest level of knowledge as a result of examining the valency of chemical elements, which was reflected in the possibility of composing chemical formulas. Also, the learners mastered the skill of creating ion exchange reactions. Likewise, high school students were able to achieve higher mastery of the Ukrainian language as a result of writing essays on the given topics. A small number of future teachers demonstrated average performance, which had a corresponding effect on the performance of the learners.

During the study, the authors identified limitations that may affect the overall approach to learning. Also, these restrictions are aimed at the possibility of ensuring the development of linguistic and communicative competence of future teachers, which contributes to a better approach to the students' mastery of the applicable material (Figure 2).

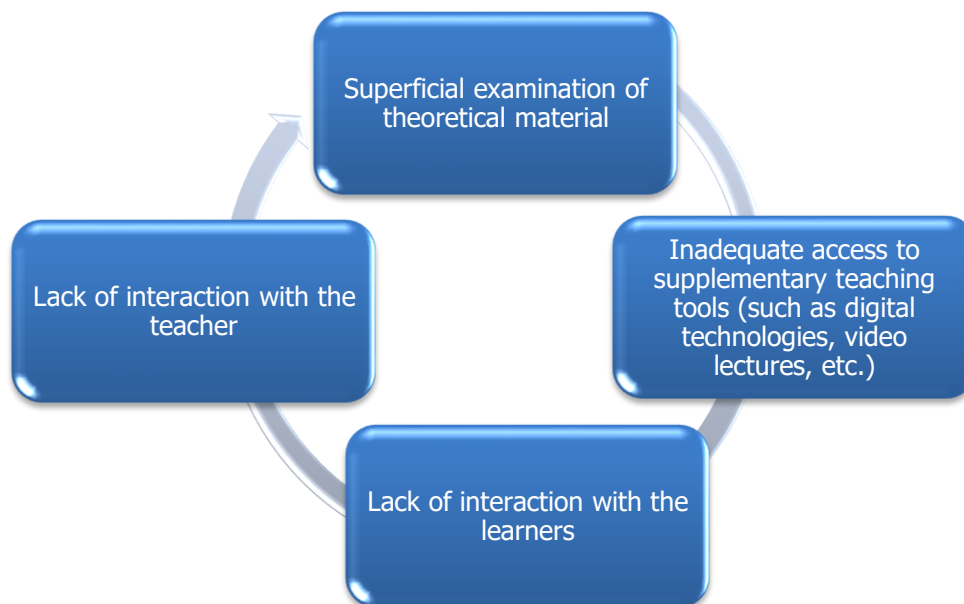


Figure 2. Limitations arising during the study of theoretical information by future teachers via direct exposure at school.

The aforementioned limitations can be resolved through proper training organization and detailed comprehension of all educational processes. Furthermore, prospective teachers ought to maintain consistent communication with their colleagues in order to select the most relevant methods for conducting classes tailored to learners' needs.

In the course of future teachers' practice at school, the authors determined what professional competencies they acquired, which are related to the effective development of language and communication competencies (Figure 3).

The results of the study showed that the motivation of future teachers as a result of teaching in schools became a crucial component in the cultivation of professional skills. First and foremost, students developed independence as a result of individualization in acquiring practical skills. Focusing on the independence of future teachers allows to ensure the most advantageous strategies for establishing relevant communication between learners. Innovative thinking is an operational component, which is reflected in the search for non-standard, differentiated approaches to presenting the material, which is necessary for the formation of linguistic and communicative competence. Furthermore, future teachers mastered professional communication skills, which was reflected in interaction with learners of different grades. This skill allowed mastering professional vocabulary for the development of linguistic and communicative competence. In addition, managerial skills were also developed among future teachers, but at a lower level than other professional skills, as during the lessons preparation students were guided by the advice of university professors.

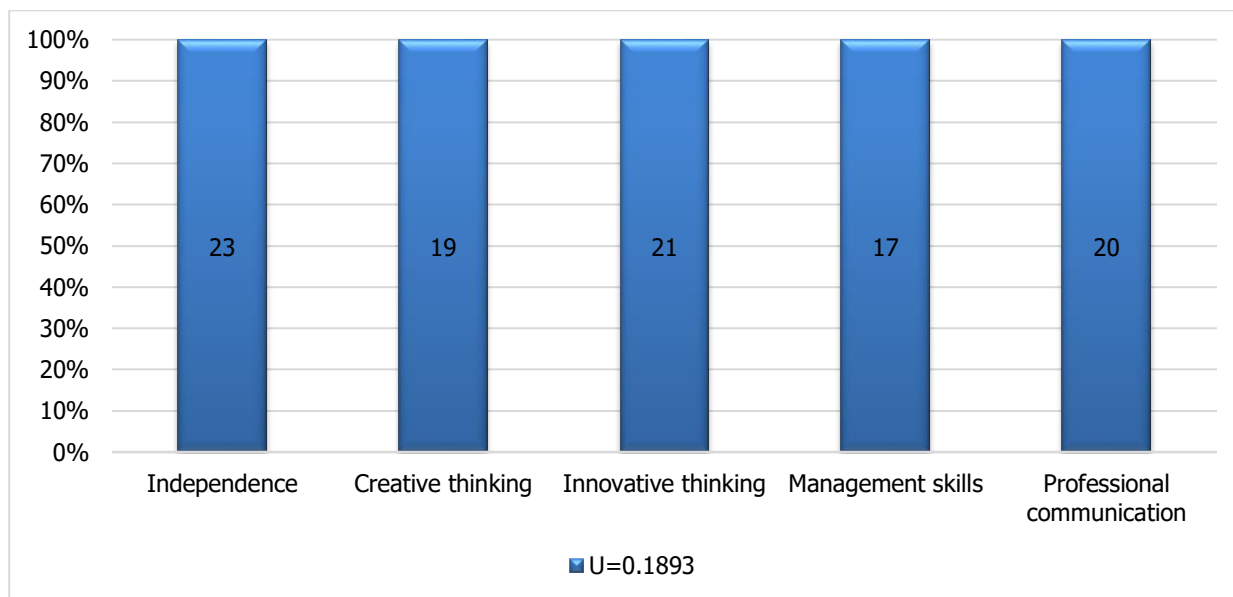


Figure 3. Professional competencies acquired by future teachers after the practice.

5. Discussion

The development of professional competencies of future teachers is possible due to the use of STEM technologies. With the help of STEM technologies, it is possible to ensure a profound understanding of the relevant educational processes, to form the necessary level of skills and thinking. During the training process, it is imperative to rigorously adhere to evidence-based methodologies in order to establish a high-quality learning experience (Zhou et al., 2022). In this light, modeling processes can be used to develop the professional competence of future teachers. The effectiveness of modeling is related to ensuring the possibility of reproducing educational content, understanding the learning process, and ensuring continuous

access to materials. The implementation of modeling in education enables one to direct their attention towards the continual refinement of competencies, as well as the capacity to deliberately oversee the pedagogical procedure (Ammonet, Reudenbach & Peter, 2023). The formation of practical skills of future philology teachers can be achieved as a result of the use of gamification technologies. Elements of gamification make it possible to develop systematic resources for creating motivating educational strategies. The effectiveness of information assimilation is achieved as a result of utilizing the methods of creative practice-oriented project activity. As emphasized by Petrovych et al. (2023), consistency should be maintained during the training, which will increase student motivation therein. In contrast to the published articles, in our work the emphasis was placed on the use of interactive technologies as one of the efficiency elements. For the formation of professional competences, the authors elaborated four mechanisms that contributed to the acquisition of knowledge of the Ukrainian language and Chemistry / Natural science.

The practical skills of future teachers should be formed as a result of the correct organization of the educational process. This can be achieved as a result of understanding the relationship between pedagogical and technological knowledge, integrating digital technologies into the educational process. This approach will ensure changes in teaching methods, in particular it is expedient to constantly monitor possible changes in education to ensure relevant ways of presenting information (Bedin, Marques & das Graças Cleophas, 2023). During the acquisition of practical skills of future teachers, constant monitoring of the educational process should be ensured. This will allow to identify gaps in knowledge, as well as to identify mechanisms for increasing the future teachers' strengths. The reverse learning methodology fosters the enhancement of cognitive abilities, flexibility, advancement of cognitive retention. and understanding of future teaching strategies. It will also allow to provide interpersonal communication skills, which can impact the enhancement of communication between the teachers and their trainees (Barraza & Rodríguez, 2023). The acquisition of practical knowledge of future educators as a result of teaching in schools can contribute to reducing the gap between the acquired knowledge of pre-service teachers and the curriculum. A positive influence on the development of the education system is formed due to the presence of feedback from the learners, which affects the quality of the educational process. Enhancing the educational process yields a positive impact on the efficacy of professional competencies' cultivation (Orosz, Recino & Ochoa, 2023). In contrast to the analyzed works, in our article the emphasis is placed on choosing the most favorable mechanisms for the development of future teachers' practical skills, focusing on ensuring the efficiency thereof as well as the efficiency of learners.

Acquisition of practical skills of future teachers should be based on innovation and development of creative thinking. Achieving a high level of professional competence is possible as a result of ongoing discussion of the educational process with peer teachers, which will allow choosing the most effective mechanisms. This impacts the comprehension of the theoretical structure, which in turn affects the development of potential value. Moreover, this procedure will manifest in the prospect of establishing systematicity and scientific rigor throughout the educational process (Lane, Mcgarr & Nicholl, 2023). Innovative digital practices contribute to the development of professional skills of future teachers. With their help, it is possible to form awareness in the learning process, which affects the implementation of highly effective learning using active learning tools. A systematic approach to learning will allow the enhancement of professional skills and knowledge, which will be reflected in the pre-service teachers' individual characteristics (Keengwe, 2023). The analysis of literary works revealed that the acquisition of practical skills by prospective teachers can be achieved through knowledge sharing with their peers. The use of digital technologies can also contribute to this process. In our work, emphasis is placed on the possibility of developing professional competencies as a result of acquiring practical knowledge of future teachers via direct classroom exposure, since as a result of our study it was established that such an approach has the greatest effectiveness. During the presentation of the educational material, the future teachers had to ensure the practical implementation of theoretical materials within the educational system, to form an innovative approach to the organization of lessons. Additionally, it was necessary to foster the use of interactive technologies during the school practice and establish effective teacher-learner communication. Such an approach to education influenced not only

high performance among the trainees, but also contributed to the formation of future teachers' professional competence skills.

6. Conclusions

The authors successfully achieved the outlined research objectives. An evaluation of diverse methodologies for obtaining practical skills revealed that future educators were able to acquire such competencies upon conducting classes within school institutions. Such an approach to instruction had the greatest effect on the effectiveness of future teachers (4.7) as well as learners (4.6). This pertains to the facilitation of personalized instruction as regards how pre-service teachers perceive information. The second most significant aspect pertains to the methodology utilized in acquiring practical skills predominantly in academic setting (70%) and partially during practice at school (30%). This methodology enables us to comprehend the genuine process of acquiring knowledge (31%).

In order to ensure the implementation of the aforementioned approaches in the educational process, the authors elaborated applicable learning mechanisms. The latter were intended to ensure the adaptation of theoretical materials to the practical system of education, which affected the consistency of the educational process. The innovative approach to the organization of lessons was aimed at forming the learners' interest in mastering the material. Conducting lessons with the help of interactive technologies involved intensification of thinking as well as individualization of learning. To learn the Ukrainian language during classes, the future teachers were encouraged to use the interactive resources of LearningApps.org and Mova. The study of Chemistry was based on the use of the Mozaik application. The school practice also provided for establishing communication between learners and the future teacher. It was established that the use of such an approach in education was reflected in the learners' overwhelming attainment of a high level of knowledge. A profound level of expertise for future educators of the Ukrainian language was attained among 64% of teachers, whereas Chemistry / Natural science teachers comprised 60%. Further, it was established that trainees also achieved high results. After completing the training, prospective teachers succeeded in acquiring skills that contribute to the development of professional competence. Among them are independence (23%), innovative (21%) and creative (19%) thinking, professional communication skills (20%) and management skills (17%).

The practical significance of the research lies in the possibility of introducing effective mechanisms for the development of practical skills in pre-service teachers of the Ukrainian language and Chemistry / Natural science. Research perspectives may be related to comparing the effectiveness of the future teachers expertise as a result of their practice in secondary and higher educational institutions.

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The role of project-based learning in the training of future officers

El papel del aprendizaje basado en proyectos en la formación de futuros oficiales

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Abstract

The article aims to identify project technologies' effectiveness in forming future officers' professional competence. Testing and a formative experiment were used as the research methods. The study was conducted with cadets of military educational institutions. Each project consisted of organisational, motivational, research and final stages, which included reflection on the acquired knowledge. Typical trends in the transformation of professional competence in military education were identified. The project-based

learning method has been found to contribute to forming the communicative, managerial, motivational, and cognitive components of future officers' professional competence. This method was least effective for forming the emotional and volitional components of future officers' competence. In general, the research hypothesis about the effectiveness of the project method in training future officers was partially confirmed. The hypothesis about the dependence of the effectiveness of the project method on the course of study in future officers' training was fully confirmed. The results can be used to improve the effectiveness of educational programmes for training future officers. Further prospects for the research are to study the relationship between the project method's effectiveness and students' psychological characteristics.

Keywords: learning methods, military education, professional training, project method, project-based learning.

Resumen

El artículo tiene como objetivo identificar la efectividad de las tecnologías del proyecto en la formación de la competencia profesional de los futuros oficiales. Se utilizaron pruebas y un experimento formativo como métodos de investigación. El estudio se realizó con cadetes de instituciones educativas militares. Cada proyecto constaba de etapas organizativas, motivacionales, de investigación y finales, que incluían la reflexión sobre los conocimientos adquiridos. Se identificaron tendencias típicas en la transformación de la competencia profesional en la educación militar. Se ha encontrado que el método de aprendizaje basado en proyectos contribuye a formar los componentes comunicativos, gerenciales, motivacionales y cognitivos de la competencia profesional de los futuros oficiales. Este método fue menos efectivo para formar los componentes emocionales y volitivos de la competencia de los futuros oficiales. En general, se confirmó parcialmente la hipótesis de investigación sobre la efectividad del método de proyectos en la formación de futuros oficiales. La hipótesis sobre la dependencia de la efectividad del método de proyecto en el curso de estudio en la formación de futuros oficiales se confirmó plenamente. Los resultados pueden utilizarse para mejorar la efectividad de los programas educativos para capacitar a los futuros oficiales. Otras perspectivas para la investigación son estudiar la relación entre la efectividad del método del proyecto y las características psicológicas de los estudiantes.

Palabras claves: métodos de aprendizaje, educación militar, formación profesional, método de proyectos, aprendizaje basado en proyectos.

1. Introduction

A critical factor in the effectiveness of defence structures is the training of qualified personnel, especially mid-level field commanders, who can make adequate decisions quickly. It became clear in Ukraine in 2014, but the problem of highly qualified management personnel has become more acute since February 24, 2022. The full-scale aggression of the Russian Federation has determined the need to restructure the training of future officers quickly. It became apparent that the quality education of military commanders should be based on modern, scientifically proven didactic principles.

Ukraine's military education system is still under the influence of outdated pedagogical dogmas. Still, it is gradually being transformed with the best practices of the world's higher military education institutions (Uvarkina, 2022). A significant trend in military education is the digitalisation of various aspects of professional training (Holth & Boe, 2019). This approach demonstrates the importance of considering modern society's requirements in the organisation of the educational process. The use of problem-based learning (Johansen et al., 2021), project-based learning (Bhinder & Protsenko, 2022) and the research method (Andreas, 2022) in military education are especially effective in the training of future military personnel.

The effectiveness of the project-based method in professional training is a proven fact (Chen & Yang, 2019). Such research usually focuses on the impact of the method on student performance, professional and personal development (Lotsman et al., 2022), and the effectiveness of project-based learning for the formation of students' motivational spheres and self-regulation (Shin, 2018; Sohmen, 2020). The project-based method can increase learning productivity through the active exchange of knowledge between students (Almulla, 2020).

The problem of implementing the project-based method in higher education has been studied many times in scientific research. At the same time, the use of projects for training military specialists has been studied little. In particular, the issues of developing and testing specific didactic programmes of project-based learning, depending on the year of study of cadets of military educational institutions, need further clarification. This research focuses on solving current social, theoretical, and practical problems.

The study aims to identify the effectiveness of using project technologies for the formation of future officers' professional competence.

Research objectives:

- 1) to determine the specifics of the development of components of future officers' professional competence depending on the course of study;
- 2) develop and test a system of project-based learning as a means of training future officers;
- 3) to determine the impact of project-based learning on the formation of various components of cadets' professional competence.

2. Literature Review

The project method is aimed at creating a specific product by students based on clear guidelines, i.e. a specific task setting (Guo et al., 2020). The basis of this method is students' independent work. The use of projects in learning involves the active position of students and their autonomy, research activities, precise goal setting, productive communication, and focus on internship (Kokotsaki et al., 2016). Other researchers share similar views (Krajcik & Shin, 2014), emphasising that an essential aspect of project-based learning is summarising and presenting the results. Evaluation of project results requires a clear system of criteria (Efendi, 2023). It is essential to focus the project method on the needs of students (Kiong et al., 2022). Depending on the specifics of the learning activity, different types of projects are distinguished: research, creative, role-playing, informational and practice-oriented (Tadeush, 2017).

One of the main advantages of the project method is its focus on developing teamwork skills (Viro et al., 2020). Project-based learning involves group differentiation by functional roles, such as critics and analysts (Ivanova et al., 2021).

The positive impact of projects on the development of a student's personality has been scientifically proven. For example, the project method develops critical thinking and the ability to formulate questions (Sasson et al., 2018), determines the productive transfer of acquired practical skills to real life (Hasni et al., 2016), and develops students' leadership skills (Tyurina et al., 2022).

However, despite the positive aspects of using the project method, there are a few problems with its practical implementation. These difficulties relate to feedback, goal setting by students, adequate mastery of the theoretical content of the course, and the integrity of the educational process (Markula & Aksela, 2022). The use of so-called driving questions, i.e., questions that stimulate students' cognitive activity, is problematic as well, as about half of the teachers surveyed simply ignore this aspect of project design (Haatainen & Aksela, 2021). There are difficulties with the implementation of critical analysis of the project

problem (Mentzer et al., 2017). It's difficult to assess the effectiveness of the project method due to a lack of clear criteria for distinguishing project-based learning from other educational tools, such as problem-based learning (Condliffe et al., 2017).

The main components of future officers' training are the aim and purpose of the educational programme and its every course; scientifically based knowledge; practical knowledge; theoretical and practical use of the acquired knowledge with further reflection (Hedlund, 2019). An important condition for the training of future officers is to ensure the logic of the material presentation, consider the specifics of professional training, implement the principle of comprehensiveness, and strengthen interdisciplinary links (Kolisnyk et al., 2020). All these components are closely interrelated and determine the didactic effect.

The use of the project method helps to increase the cadets' active participation in the educational process (Geir & Rino Bandlitz, 2020) and is effective in teaching philological disciplines in military educational institutions (Dragomir et al., 2019). The implementation of the project method in future officers' training involves the division into argumentative, search, technological and final stages (Bhinder & Protsenko, 2022).

The analysis of theoretical sources proves that the problem of the project method in higher education is quite relevant. There are theoretical studies that examine the specifics of using projects in future officers' training. At the same time, further study of the problem requires organising, conducting, and analysing the data of formative experiments.

3. Methods and Materials

Research Stages

The experiment took place between November 2022 and April 2023 and involved the implementation of an experimental programme based on a theoretically grounded project method to develop future officers' professional competence. In the samples, 3-4 projects were implemented in accordance with the topics of the silabus and the curricula of a particular speciality. The topics of the projects were chosen in accordance with the content of the curricula. Each project included an organisational stage – choosing a topic, informing students about the specifics of the activity; motivational – stimulating cognitive activity, setting up problem situations; research – a thorough study of the topic, practical implementation of project tasks, communication with the teacher; presentation of results; summing up the results with mandatory reflection. These stages overlapped in the educational process. The experiment plan included primary diagnostics (November 2022) and secondary diagnostics (April-May 2023) in the experimental and control groups. Quantitative analysis, data interpretation and summarisation were carried out in May-June 2023.

The experimental impact was aimed at future officers' professional competence. The theoretical analysis allowed us to identify the following structural components of cadets' professional competence: motivational, cognitive, communicative, managerial, emotional, and volitional (Biliavets, 2017). It should be noted that we have proposed the allocation of the emotional and volitional components of professional competence as an important psychological component for the successful implementation of professional activities.

Research Tools

Based on the literature review, through testing, we have identified a set of methods aimed at diagnosing the indicators of future officers' professional competence (Kokun et al., 2012). The methodology for assessing communicative and organisational aptitudes by V. V. Sinyavskiy and B.A. Fedorishyn (Kokun et al., 2011) is aimed at studying the communicative and managerial components. T. Ehlers' methodology (Stud.com.ua, 2023) for diagnosing personality *motivation for success* allowed us to find out the indicators

of the motivational component of professional competence. The use of a questionnaire for studying volitional self-control was aimed at testing the emotional and volitional component of cadets' professional competence. The tests for checking the cognitive component were created based on the content of particular courses and the specifics of the cadets' training in general. The validity and reliability of the selected methods were verified by their repeated use, as well as by expert evaluation (test for determining the cognitive component).

The sample was formed based on students of the following higher education institutions of Ukraine: Lviv State University of Life Safety (Lviv), Bohdan Khmelnytskyi National Academy of the State Border Guard Service of Ukraine (Khmelnytskyi), Kharkiv National University of Internal Affairs (Kharkiv). The different specialisations of the educational institutions allow us to increase the representativeness of the research conducted. The following samples were created to test the hypothesis and achieve the research goal: a control group of first- and second-year students (88 people); an experimental group of first- and second-year students (92 people); a control group of graduate students (79 people); an experimental group of graduate students (85 people). The total number of participants in the formative experiment was 344 cadets. The authors of the article were the experimenters.

Data collection and implementation of the experimental strategy were carried out through direct communication. The students from the research samples took the experimental tasks quite responsibly. Occasional conflict situations within the samples were recorded. No confrontations with the experimenters were observed.

Data were analysed by calculating the percentages and Student's t-test using SPSS.22 software. The Kolmogorov-Smirnov test was used to determine the correctness of the significance criteria. To unify the data obtained, the levels of the studied characteristics were reduced to a scale: high, above average, average, and low.

Ethical criteria were met by ensuring confidentiality, humanism, and a positive perception of the individual. All the students gave consent to participate in the research programme.

4. Results

The data obtained during the formative experiment are presented in Table 1 and Table 2. Let us analyse the dynamics of each component of the professional competence of first- and second-year students-future officers.

Table 1.

Changes in the formation of components of future officers' professional competence under the influence of the experimental programme (1-2 years of study)

Components of professional competence	Levels of competence formation	Number of students surveyed							
		Control group				Experimental group			
		Before influence		After influence		Before influence		After influence	
		%	Quantity	%	Quantity	%	Quantity	%	Quantity
Communication component	Low	3,41	3	5,68	5	6,52	6	5,43	5
	Average	36,36	32	35,23	31	32,61	30	11,96	11
	Above average	38,65	34	37,51	33	38,04	35	31,52	29
Management component	High	21,58	19	21,58	19	22,83	21	51,09	47
	Low	2,27	2	2,27	2	4,35	4	4,35	4
	Average	44,32	39	42,05	37	44,57	41	32,61	30
Motivational component	Above average	36,36	32	38,63	34	33,7	31	26,08	24
	High	17,05	15	17,05	15	17,38	16	36,96	34
	Low	2,27	2	2,27	2	3,26	3	3,26	3
Cognitive component	Average	54,55	48	54,55	48	53,26	49	50	46
	Above average	37,5	33	38,63	34	38,05	35	40,22	37
	High	5,68	5	4,55	4	5,43	5	6,52	6
Emotional and volitional component	Low	21,58	19	11,36	10	22,83	21	4,35	4
	Average	44,32	39	28,41	25	57,61	39	7,61	7
	Above average	21,58	19	45,45	40	21,74	20	34,78	32
	High	12,52	11	14,78	13	13,04	12	53,26	49
	Low	6,82	6	6,82	6	5,43	5	5,34	5
	Average	35,23	31	31,81	28	35,87	33	33,7	31
	Above average	40,9	36	44,32	39	40,22	37	41,31	38
	High	17,05	15	17,05	15	18,48	17	19,65	18

At the beginning of the study, first- and second-year students had average and above-average indicators of communicative skills. A high level was recorded in about a fifth of the respondents. The low level is represented minimally. No significant changes were recorded in the control sample after implementing the project-based learning programme. Repeated diagnostics in the experimental group of future officers showed that the number of people with average scores decreased by 20.65%. The percentage of people with high indicators of communicative skills increased by 28.26%.

The cadets' managerial component is somewhat less developed than the communication component. At the same time, there is again a predominance of average and above-average levels. In the control group, the indicators remained statistically stable after implementing the project technology. In the experimental group, the proportion of cadets with a high level of organisational skills increased by 19.58%, while the number of students with average decreased by 11.96%, and those with the above-average level decreased by 7.62%. The results indicate the project method's effectiveness in forming the communicative and managerial component of cadets' professional competence.

High and low levels of the motivational component are minimal. About half of the studied cadets showed the average level, and 40 % – the above-average level. Changes in the control and experimental samples after the experiment are insignificant (2-3 %). The results obtained prove the lack of effectiveness of the developed programme regarding the formation of the motivational component.

Table 2.

Changes in the formation of components of future officers' professional competence under the influence of the experimental programme (final year of study)

Components of professional competence	Levels of competence formation	Number of students surveyed							
		Control group				Control group			
		Before influence		Before influence		Before influence		Before influence	
		%	Quantity	%	Quantity	%	Quantity	%	Quantity
Communication component	Low	24,05	19	24,05	19	21,18	18	7,06	6
	Average	26,58	21	26,58	21	28,24	24	17,65	15
	Above average	45,57	36	45,57	36	45,88	39	49,41	43
	High	3,8	3	3,8	3	4,7	4	24,7	21
Management component	Low	1,27	1	1,27	1	2,35	2	1,18	1
	Average	16,46	13	13,92	11	17,65	15	18,83	16
	Above average	53,16	42	50,63	40	52,94	45	51,76	44
	High	29,11	23	34,18	27	27,09	23	28,23	24
Motivational component	Low	0	0	0	0	1,18	1	1,18	1
	Average	55,7	44	51,9	41	52,94	45	29,41	25
	Above average	44,3	35	48,1	38	43,53	37	49,41	42
	High	0	0	0	0	2,35	2	20	17
Cognitive component	Low	8,86	7	2,53	2	9,41	8	9,41	8
	Average	22,78	18	13,92	11	24,7	21	23,53	20
	Above average	49,37	39	43,04	34	47,06	40	51,77	41
	High	18,99	15	40,5	32	18,83	16	18,83	16
Emotional and volitional component	Low	24,05	19	22,78	18	20	17	17,65	15
	Average	36,7	29	37,97	30	37,65	32	40	34
	Above average	7,59	6	7,59	6	11,76	10	11,76	10
	High	31,66	25	31,66	25	30,59	26	30,59	26

The first- and second-year cadets have medium levels of the cognitive component, i.e., basic knowledge of the speciality, as this knowledge only forms at the beginning of studies. Positive changes were recorded in both groups. In the control group, the low level decreased by 10.22%, the average level by 15.91%, and the above-average level increased by 23.87%. In the experimental group of future officers, low values decreased in 18.48% of students, average values decreased in 50.06%, above average values increased in 13.04%, and high values increased in 40.22%. Consequently, the experimental group performed better. It can be concluded that project-based learning has a practical impact on acquiring ideas about professional activities by future officers.

The results of the emotional and volitional components are similar to the results of the diagnostics of the previous parameters, namely, average and above-average indicators dominate. After implementing the formative impact, no significant changes were recorded in both study groups.

The results of the formative experiment on the sample of future officers in their final year of study are presented in Table 2. The cadets mainly showed higher-than-average indicators of communicative skills. Low and average indicators are approximately equal. After the experiment, the indicators of the control sample remained practically unchanged. In the experimental sample, after implementing the project-based learning programme, low values decreased in 14.12% of cadets and medium values in 10.59% of the students. A high level was observed in one-fifth of the respondents after the programme implementation, proving the project method's effectiveness.

In the sample of graduates, high and above-average indicators of the managerial component of future officers' professional competence prevail. In the control and experimental samples, the indicators of organisational skills did not change significantly after the project-based learning programme.

The average and above-average levels prevail in the studied samples of graduate cadets. After the formative experiment, the results in the control sample did not change. In the experimental group, the share of the average level decreased by 23.53%. High levels of motivation to succeed increased in 17.65% of students. The results indicate the effectiveness of the project method for developing the motivational component of the graduate student's professional competence.

The most pronounced are the above-average indicators of the cognitive component in the study sample of military graduates. High indicators in the control sample increased by 21.51 % after the experiment. In the experimental sample, the results did not change significantly. In other words, the project method did not stimulate the improvement of the academic training of graduate students. At the same time, traditional educational forms have demonstrated effectiveness.

Average and high indicators of professional competence's emotional and volitional components prevail. After implementing the experimental programme of project-based learning, the results did not change significantly.

To clarify the results obtained, the Student's t-test was used. Using the Kolmogorov-Smirnov criterion justifies the expediency of calculating this particular statistical procedure. The results of the calculation are presented in Table 3. As seen, statistically significant differences were recorded in the experimental group of 1–2-year cadets regarding communicative and organisational skills and the cognitive component. In both control groups, statistically significant changes were found only in the cognitive component. In the experimental group of final-year students, statistical changes were found in terms of communicative skills and motivation to succeed.

Table 3.

Student's t-test value of future officers' professional competence (based on the results of the formative experiment)

Components of professional competence	Student's t-test			
	Control group (1-2 years of study)	Experimental group (1-2 years of study)	Control group (final year of study)	Experimental group (final year of study)
Communication component	1,347	2,939**	1,232	2,454*
Management component	1,544	2,278*	1,338	1,229
Motivational component	1,694	1,113	1,667	2,333*
Cognitive component	2,349*	3,012**	2,448*	1,239
Emotional and volitional component	1,775	1,299	1,322	1,561

Hence, the developed project-based learning programme demonstrated partial effectiveness in influencing the professional competence of future officers.

5. Discussion

The results obtained allow us to confirm the improvement of the main components of professional competence. As we can see while studying at military education institutions, the managerial component is strengthened, but the indicators of communication skills are somewhat reduced. This situation can be explained by the directive nature of the military speciality and the focus on rigid ways of behaving with subordinates. The motivation to succeed maintains stability while studying at military educational

institutions. Indicators of the cognitive component of professional competence improve during studying at the educational institution. Future officers' emotional and volitional indicators improve in graduate cadets compared to the beginning of their studies. It can be said that traditional forms of education positively impact the preparation of future processes, but this process is significantly extended.

Testing the effectiveness of the project-based method in training future officers has yielded mixed results. In the first years of study, project-based learning effectively forms communicative, managerial, and cognitive components. At the same time, the sample of final-year students shows a positive impact of projects on the indicators of the communicative and motivational components of cadets' professional competence. The experimental programme did not demonstrate effectiveness in developing the emotional and volitional component, which is consistent with the results of other researchers (Tyurina et al., 2022). Let's analyse the results obtained in the context of the findings of other researchers. The problem of forming theoretical knowledge in project-based learning has already been studied by researchers (Markula & Aksela, 2022). However, the effectiveness of the project method in forming motivation cannot be unequivocally stated (Sohmen, 2020). The positive impact of the method on increasing cadets' active participation in learning has not been proved either (Geir & Rino Bandlitz, 2020). The effectiveness of using the project method to develop self-regulation has not been confirmed (Shin, 2018). The specifics of professional training in military educational institutions can explain the contradictory results.

It is advisable to determine the specifics of the implementation of the project method in accordance with theoretical sources. We found the importance of clear evaluation criteria manifested in summing up the results (Efendi, 2023). In addition, we tried to consider students' needs through introductory conversations (Kiong et al., 2022). We agree with the statement about presenting results in project-based learning (Krajcik & Shin, 2014) and the importance of reflection in military training (Hedlund, 2019). The division of working group participants according to functional roles was productive (Ivanova et al., 2021). Our study used the typical stages of the project method in military education (Bhinder & Protsenko, 2022).

The results generally confirm the feasibility of using the project method in training future officers. At the same time, analysing theoretical sources will improve the developed didactic programmes.

6. Limitations

Potentially, more accurate results can be obtained by using an expanded set of diagnostic methods to study the components of professional competence. The experimental use of projects may differ from the results of their implementation in some educational conditions.

7. Conclusions

The relevance of the problem of using the project method in the training of future officers is determined by the social significance of effective military training, insufficient theoretical development, and practical orientation of the study. Theoretical generalisations are made based on a formative experiment and two empirical sections. During training, the managerial component of professional competence improves, but the communication component worsens. The cognitive and emotional-volitional components of future officers' professional competence develop during professional training. The motivational component remains stable. For first-year students of military educational institutions, the project-based learning method contributes to the formation of communication skills, organisational skills, and academic knowledge.

For final-year students, the project positively affects cadets' professional competence's communicative and motivational components. The project method is the least effective for forming cadets' professional competence's emotional and volitional components. The results obtained create a basis for optimising

educational programmes for future officers. The project method is appropriate for forming future officers' communication managerial skills, which can be recorded in the relevant software. The data on the levels of future officers' professional competence and the partial effectiveness of project-based learning will allow for individualising the educational approach. Further prospects for research are to study the relationship between the use of the project method and the psychological and social characteristics of future officers.

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