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LIFELONG- AND DISTANCE LEARNING IN THE COINTEXT OF ARTIFICIAL INTELIGENCE (AI)

Lifelong learning and distance learning have become increasingly relevant in artificial intelligence (AI) and its impact on the labor market and society. AI is transforming various industries, and as a result, individuals need to gain new skills and knowledge to stay competitive in the job market, changing job requirements and advance in their careers. Distance learning, which involves the use of technology to deliver educational content to students who are not physically present in a traditional classroom setting, has become a popular approach to lifelong learning. With the rise of AI, distance learning has become more accessible, flexible, and personalized than ever before. AI-powered educational technologies, such as adaptive learning systems and intelligent tutoring systems, can provide personalized learning experiences that accommodate individual learners' needs and preferences. These technologies can also provide real-time feedback to help learners identify areas for improvement and adjust their learning strategies accordingly.

Keywords: Lifelong Learning, Distance Learning, Artificial Intelligence (AI), Education, University, Job Market, Information And Communication Technologies (ICTs).

Освіта впродовж життя та дистанційне навчання в контексті штучного інтелекту. Освіта впродовж життя та дистанційне навчання стають дедалі актуальнішими у сфері штучного інтелекту та його впливу на ринок праці та суспільство. Штучний інтелект трансформує різні галузі, в результаті чого люди мають здобути нові знання й навички, щоб залишатися конкурентоздатними на ринку праці, змінюючи вимоги до роботи та просуваючись у кар'єрі. Дистанційне навчання, що передбачає використання технологій для надання освітнього контенту здобувачам вищої освіти, які фізично не присутні в традиційному класі, стало популярним підходом для освіти впродовж життя. З появою штучного інтелекту дистанційне навчання стало й більш доступним, гнучким і персоналізованим, ніж будь-коли раніше. Освітні технології на основі штучного інтелекту, такі, зокрема, як адаптивні системи навчання та інтелектуальні системи репетиторства, можуть забезпечити персоналізований досвід навчання, який відповідає потребам і вподобанням окремих здобувачів освіти. Ці технології також уможливають зворотний зв'язок у режимі реального часу, щоб допомогти здобувачам освіти визначити сфери, які потрібно вдосконалити і відповідно скоригувати у свої стратегії навчання.

Ключові слова: освіта впродовж життя, дистанційне навчання, штучний інтелект, освіта, університет, ринок праці, інформаційно-комунікаційні технології.

Introduction. The problem of lifelong learning refers to the challenge of acquiring new knowledge and skills throughout one's life in order to keep up with the

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rapidly changing demands of the modern workforce and society. Many adults have busy lives with work, family, and other obligations that make it difficult to find time for learning. Education and training can be expensive, and sufficient people cannot afford to take time off work or pay for courses. Without a clear goal or incentive, some people may not feel motivated to continue learning. As technology continues to advance, it's challenging to keep up with new tools and platforms for learning. Some people may not have access to the resources, such as a reliable internet connection or a library with up-to-date materials. To address these challenges, there are various initiatives and programs that aim to promote lifelong learning, such as online courses, flexible scheduling options, and employer-sponsored training. However, there is still much work to be done to ensure that everyone has access to the resources and opportunities they need to continue learning throughout their lives.

Purpose, methods and approaches. Main results. Artificial Intelligence (AI) and lifelong learning are two closely related concepts in machine learning. While AI has shown remarkable progress in recent years, it still faces several challenges that hinder its ability to learn and adapt continuously. One of the biggest problems with AI is that it can be biased based on the data it is trained on. This means that if the data used to train the AI is biased in any way, the AI will learn and reproduce that bias, which can lead to unfair and discriminatory outcomes. AI algorithms can be highly complex and difficult to understand, which makes it challenging for humans to explain how they arrived at a particular decision. This lack of transparency can be a significant problem, especially in critical applications such as healthcare and finance. Another problem with AI is that it can overfit the data it is trained on, so it can become too specialized and not be able to generalize well to new data. This can lead to poor performance and reduced accuracy. AI algorithms can also suffer from concept drift, which occurs when the underlying data distribution changes. This can happen because of changes in the environment or changes in user behavior, and it can cause the AI to become outdated and less effective. Such algorithms require vast amounts of high-quality data to learn effectively. However, this data is not always readily available, and gaining it can be time-consuming and expensive.

LL (Lifelong learning) is not just limited to the economy and the job market, but it also encompasses all aspects of life. It is a continuous process of acquiring new knowledge, skills, and attitudes that can enhance one's personal and professional life. Helping individuals to become more adaptable to changes in their personal and professional lives, develop new interests and hobbies, improve their health and well-being, and foster social connections and relationships. For instance, lifelong learning can enable individuals to learn new languages, acquire new artistic skills such as painting or music, or even improve their cooking skills. It can also help individuals to better understand their health and wellness and adopt healthier lifestyles. Lifelong

learning can also help individuals to become more engaged and active members of their communities, promote social inclusion, and foster a culture of civic participation and responsibility. Therefore, it is crucial to recognize the importance of lifelong learning beyond the job market and promote it as a fundamental aspect of personal and social development.

It is a concept that emphasizes the importance of continuous learning throughout one's life, regardless of age or stage of education. From early childhood education to higher education, all sectors of education play a critical role in promoting lifelong learning. For example, in early childhood education, children can develop a love for learning and acquire basic literacy and numeracy skills that can serve as a foundation for future learning. In primary and secondary education, students can acquire subject-specific knowledge, critical thinking skills, and social and emotional competencies that can prepare them for higher education and future careers. In higher education, students can acquire advanced knowledge and skills in their chosen fields of study, engage in research and innovation, and develop the skills necessary for lifelong learning and professional development. All sectors of education can promote lifelong learning by providing opportunities for professional development and continuing education for educators and other professionals.

Adult learning, in particular, should be voluntary and tailored to the specific needs and interests of learners. Learner-centred education emphasizes the importance of actively involving learners in the learning process, rather than presenting information to them. It recognizes that learners come to the learning experience with different backgrounds, experiences, and motivations, and therefore requires an approach that is flexible, adaptable, and responsive to their needs. Voluntary adult learning allows learners to take ownership of their learning and pursue their interests and goals at their own pace.

This approach promotes self-directed learning and allows learners to customize their learning experience to meet their unique needs and preferences. Tailored adult learning recognizes that adult learners have different needs and goals, and therefore requires an approach that is personalized and responsive to these needs. This may involve providing individualized support, adapting learning materials to suit different learning styles, or offering a range of learning options to accommodate different schedules and preferences.

Information and communication technologies (ICTs) have brought about significant innovations in teaching and learning. Integrating ICTs into education has transformed traditional teaching and learning approaches and opened up new opportunities for learners and educators. ICTs have made it possible to access information and knowledge from anywhere and collapsing barriers of time and space. They have also made it possible to engage learners in interactive and collaborative learning activities, promoting active participation and engagement. Using ICTs has

led to the development of new pedagogical approaches, such as blended learning, which combines face-to-face teaching with online learning. This approach allows learners to access educational resources and engage in learning activities both inside and outside of the classroom. ICTs have made it possible to tailor education to individual learners' needs and preferences, promoting personalized learning. This approach enables learners to access customized learning materials, receive individualized feedback and support, and progress at their own pace. ICTs have also made it possible to educate learners in remote or underserved areas, opening up new opportunities for access to education and promoting social inclusion.

Human capital refers to the knowledge, skills, and competencies that individuals gain through education and training, which are essential for economic growth and development. Investing in human capital through lifelong learning can have significant economic benefits, such as increased productivity, innovation, and competitiveness. Lifelong learning can also lead to improved employment opportunities and higher earnings for individuals, which can have positive spillover effects on their families and communities. Lifelong learning can help individuals to adapt to changing labour market demands and technological advancements, reducing the risk of skill obsolescence and unemployment. This can contribute to a more resilient and inclusive economy. In this sense, lifelong learning can be seen as a long-term investment in intelligent minds that can generate positive economic outcomes for individuals, businesses, and society. It requires a shift in economic thinking towards recognizing the value of investing in human capital and promoting policies that support lifelong learning opportunities for all.

Lifelong learning is a continuous process of acquiring knowledge, skills, and competencies throughout one's life, in various contexts and settings. It includes formal, non-formal, and informal learning, and encompasses a wide range of domains, such as health, well-being, personal growth, civic engagement, and cultural enrichment. In early childhood, lifelong learning promotes the development of essential skills and competencies, such as language, social, and cognitive skills, that provide the foundation for lifelong learning and success in later life. In primary and secondary education, lifelong learning focuses on developing a range of skills, including critical thinking, problem-solving, creativity, and collaboration, that are essential for academic success and personal growth. In tertiary education, lifelong learning provides opportunities for individuals to develop specialized knowledge and skills, pursue career aspirations, and engage in research and innovation that contributes to society's advancement. Lifelong learning is not limited to formal educational settings but also includes non-formal and informal learning opportunities, such as community-based learning, self-directed learning, and experiential learning, that occur outside of traditional educational institutions.

Conclusions. Addressing these problems with AI and lifelong learning will require ongoing research and development efforts in machine learning. Researchers and developers will need to work together to create more robust and transparent AI algorithms that can learn and adapt continuously over time while minimizing biases and improving accuracy. In addition, lifelong learning is a continuous process that applies to all areas of life and all levels and sectors of education. It is not limited to adult education or the economy and the job market, but encompasses a wide range of domains and contexts, promoting personal growth, civic engagement, cultural enrichment, and societal advancement. Education and cooperation between Ukraine and Europe can have numerous benefits, including enhancing economic competitiveness, improving job market opportunities, and contributing to broader political and social goals. Closer ties can also help to promote stability, democracy, and human rights.

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ПЕДАГОГІЧНИЙ ДИЗАЙН ТА ЙОГО РОЛЬ У СТВОРЕННІ ЕЛЕКТРОННИХ ОСВІТНІХ РЕСУРСІВ

У доповіді розкрито суть педагогічного дизайну, визначено й проаналізовано його роль у створенні електронних освітніх ресурсів (далі – ЕОР). Розглянуто технологію педагогічного дизайну в розробці електронних освітніх матеріалів на основі дидактичного і технологічного механізмів. Сформульовано та проаналізовано специфічні принципи педагогічного дизайну, що дозволяють виділити психолого-педагогічні вимоги, виконуючи які, в цілому як результат підвищиться якість електронних освітніх програм та ефективність освітнього процесу в цілому.

Ключові слова: педагогічний дизайн, технологічний механізм, психолого-педагогічні вимоги, електронні освітні ресурси.

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