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**Валерій МИЦЕНКО**

Центрально-український національний технічний університет, Україна  
<https://orcid.org/0000-0001-6034-0224>  
 valeriy369@hotmail.com

**Юрій СТЕЖКО**

Державний університет «Київський авіаційний інститут», Україна  
<https://orcid.org/0000-0002-0226-8081>  
 istezhko@ukr.net

## КОУЧИНГОВИЙ ПІДХІД ДО ФОРМУВАННЯ МЕТА-SKILLS «СПІВПРАЦІ» ЗІ ШТУЧНИМ ІНТЕЛЕКТОМ

**Анотація.** Потужні зрушення у галузі інформаційних технологій постали перед університетською освітою України проблемою формування покоління, спроможного до етичного керівництва штучним інтелектом. Нова технологічна реальність потребує й навичок більш масштабного гатунку, ніж soft skills. Такі навички цілком виправдано дефінуються як «meta-skills нової епохи». У статті здійснені теоретичні та методичні дослідження з формування meta-skills за коучинговою технологією. Освітній коучинг визнаний ефективним за результатами піднесення людських чеснот на рівень, недоступний жодній технології. Методично коучинг відбувається через діалоги на кшталт сократівських, в процесі яких встановлюються довірчі стосунки між коучем та здобувачем знань. За фахово організованого тренінгу студент на ментальному рівні постає ситуативним однодумцем коуча в орієнтації на певну конкретну мету та набуває професійних рекомендацій з нетворкінгу як способу її досягнення. Коучинг в більшій мірі стосується не теоретичної фахової підготовки, а формування лідерських якостей, похідних від п'яти «талантів», визначених фундатором концепту meta-skills М. Ноймайером. За освітнього коучингу meta-skills формуються в парадигмі переваг автентичного інтелекту над машинним, зверхності людини над технологіями. Фахова освіта сполучається з навичками етичного керівництва технологічними помічниками, асистентами у сфері діяльності. П'ять «талантів» meta-skills, які покликані гармонізувати стосунки студента зі штучним інтелектом, дозволять оптимально розподілити функції штучного та автентичного інтелектів, за функціонального поєднання яких досягається ефект синергії в соціальній та професійній самореалізації. Відзначається відповідність коучингової технології принципу персоналізації траєкторії студентоцентрированого навчання. Вказані положення мають сприяти практичній реалізації коучингу як засобу формування meta-skills в університетській освіті. У висновках зазначається необхідність поновлення досліджень meta-skills, здобутих за технологією коучингу на основі узагальнення практик їх застосування.

**Ключові слова:** meta-skills; «таланти»; коучинг; освіта; штучний інтелект; подкаст.

**Valerii MYTSENKO**

Central Ukrainian National Technical University, Ukraine  
<https://orcid.org/0000-0001-6034-0224>  
 valeriy369@hotmail.com

**Yurii STEZHKO**

State University "Kyiv Aviation Institute", Ukraine  
<https://orcid.org/0000-0002-0226-8081>  
 istezhko@ukr.net

## A COACHING APPROACH TO THE FORMATION OF META-SKILLS "COOPERATION" WITH ARTIFICIAL INTELLIGENCE

**Abstract.** Powerful shifts in the field of information technology have presented Ukraine's university education with the challenge of forming a generation capable of ethical management of artificial intelligence. The new technological reality also requires skills of a broader nature than soft skills. Such skills are justifiably defined as 'meta-skills of the new era'. The article presents theoretical and methodological research on the formation of meta-skills using coaching technology. Educational coaching is recognised as effective by the results of raising human virtues to a level inaccessible to any technology. Methodologically, coaching takes place through Socratic-like dialogues, in the course of which a trusting relationship is established between a coach and a learner. In a professionally organised training, a student becomes a situational like-minded coach at the mental level in focusing on a specific goal and receives professional advice on networking as a way to achieve it. Coaching is less about theoretical professional training and more about the formation of leadership qualities derived from the five 'talents' defined by the founder of the meta-skills concept, M. Neumeier. In educational coaching, meta-skills are formed in the paradigm of the advantages of the authentic intelligence over machine intelligence, the superiority of humans over technology. Professional education is combined with the skills of ethical management of technological assistants and business assistants. The five meta-skills, which are designed to harmonise the student's relationship with artificial intelligence, will allow optimal distribution of the functions of artificial and authentic intelligence, with their functional combination achieving a synergistic effect in social and professional self-realisation. The compliance of coaching technology with the principle of personalisation of the student-centred learning trajectory is noted. These provisions should contribute to the practical implementation of coaching as a tool of forming meta-skills in university education. The conclusions point out the need to resume research on meta-skills acquired through coaching technology on the basis of generalising practices of their application.

**Keywords:** meta-skills; talents; coaching; artificial intelligence; podcast

**Problem statement.** Humanity has always sought to enhance its own capabilities, both physical and intellectual. The rationalism of the Modern Age realised dreams of replacing physical labour with mechanics. Today, we are participants in or witnesses to the formation of an intellectual analogue of human consciousness – artificial intelligence, which is already showing significant progress. But the very first examples of its implementation have also caused a wave of existential fear – the fear of losing not only our own dominance, but also our very existence. Calls to urgently stop further development of artificial intelligence are evidence of helplessness, as it is well known that it is impossible to stop development. The history of science and technology is proof of this.

The task is to form national elite capable of overcoming the challenges of today with its own mind, not the mind borrowed from artificial intelligence; to form the generation that will not be afraid to direct the achievements of modern information technologies in a constructive way to serve social and economic development. The mission of nurturing a new generation belongs to education, especially to universities. Education is the largest consumer of information technology. 'Among all industries, education ranks first in the use of AI (84%)' [14, p. 163]. At the same time, education is the industry that determines the prospects for the development of humanity's relationship with artificial intelligence.

In contrast to the development of artificial intelligence, there is a need to advance the development of humans, to endow them with qualities that are inaccessible to any artificial entity – the qualities of humanity embodied in meta-skills. 'Our time is the time for crossing barriers, for erasing old categories – for probing around' [17, p. 10] words that are relevant at all times of technological revolutions. Currently, this 'breaking down barriers' to taming new technologies will be provided by the meta-skills of university graduates. Education has always been a driver of civilisational transformations and a strategic resource for social development.

With large-scale information and technological advances, the problems of education have begun to be viewed through the prism of social maturity of graduates as a set of 'five talents' meta-skills: 'feeling, seeing, dreaming, making, and learning' [18], which will ensure the unconditional priority of humans over their own creation, artificial intelligence. The 'talents' of meta-skills make it possible to take ethical control over the development of information technologies and insure humans against wrong decisions of artificial intelligence. Humanity should not rely on impersonal machine 'intelligence' for its survival. In order not to give up the priority of one's own intelligence to its machine copy, a person must be guided in decision-making not only by formal logic, in which machine intelligence may have priority, but also by extra-logical forms of comprehending reality inherent in the 'talents' of meta-skills that are inaccessible to it. Attempts to develop skills of adaptation to new realities based solely on the experience of rationality of the Modern era have no prospects of success. Time has confirmed the rightness of Marshall McLuhan, who said in the last century: 'Our 'Age of Anxiety' is, in great part, the result of trying to do today's job with yesterday's tools-with yesterday's concepts' [17 p. 8-9].

The postmodern era was marked by a new idol, artificial intelligence, and thus the need for new means of subjugating it. Scientists have now come to the conclusion that fruitful 'cooperation' with artificial intelligence is possible only by mastering the technology relevant to the challenges of forming users' meta-skills. Therefore, first foreign and later Ukrainian researchers have come to see the need for theoretical and methodological support for a coaching approach to the formation of personal meta-skills as a force to counteract technological domination. Training in the form of a networking simulacrum is a way of learning from each other the best features of social interaction and ethical management of artificial intelligence. Thus, the problem of forming meta-skills in educational institutions as the development of social and human constituents in a person through coaching is relevant, which determined the topic and purpose of our study.

**Analysis of recent research and publications.** Certain aspects of the problem of forming meta-skills using coaching technology are reflected in the studies of mainly foreign economists and sociologists. First of all, it is worth noting the importance of publications by such researchers as: the founder of the meta-skills concept M. Neumeier, who at the level of conceptualisation identified five 'talents' that a modern university graduate should have [18]; a leading researcher of educational coaching J. Whitmore, who at the essential level highlighted the role of coaching in the formation of leadership qualities, gave practical recommendations for coaches and clarified the prospects of coaching in education [30]; M. McLuhan, who at the dawn of the formation of cyberspace was distinguished by fundamental research on the impact of electronic information and communication technologies on society [16].

Particularly noteworthy are the works of such researchers as: Kozakevych O. She reveals meta-skills as skills of the new technological reality, outlines the importance of meta-skills in personal self-determination, proposes a programme for their formation [13]; Kyrpa A., Stepanenko O., Zinchenko V., Datsiuk T., Karpan I., Tilniak N. investigate the competence of teachers of social sciences and humanities in the use of artificial intelligence in the educational process, draw attention to the need to develop new methods of personalising teaching, and identify areas of application of artificial intelligence in education, including as an opponent in the Socratic dialogue [14]; Alexandrova D. reveals productive practices of coaching in educational institutions of developed countries, focuses on effective methods of forming a successful personality, realising the potential

of sociality [1]; Dmytruk V. provides the content of the concept of 'coaching' in the context of the formation of leadership qualities of a personality, offers methodology and methods of applying coaching to develop students' competence, substantiates the adaptability of coaching to student-centred education [5]; Stoyanova V. notes the importance of forming media literacy in the times of rapid development of information technology, on the example of teaching foreign languages in Bulgarian educational institutions shows the role of formal and informal knowledge in critical thinking [25]; Halaweh M, Yu N. reveal the potential of artificial intelligence in the intensification of education, argue the feasibility of its application, outline the tasks faced by a teacher regarding the integrity of students [8], [31]; Karimova Z. reveals the didactic potential of podcasts and the implementation of information technology in the educational process, provides practical recommendations for the introduction of podcast technology [11]; Seemann P., Stofkova Z., Poliaková A., Binasova V., Loučanová E. note the effectiveness of coaching in education and its advantages in the development of communication skills, propose introduction of the subject 'Fundamentals of Coaching' in university education, provide recommendations for the use of coaching in education [22].

In addition, the problems of meta-skills and the coaching approach to their formation in various aspects have been addressed to varying degrees by these researchers: John M. Culkin, Gayathri Krishna, Lalo Ávalos Méndez, Noah W. Sobe, Raúl Hernández Jorge, Jayne Fleener, Olli-Pekka Heinonen.

Valuable empirical material for our study, in particular, about advantage of the mixed way of teaching and implementation of artificial intelligence into the teaching process, and shaping the professional competence of educators, is found in publications Claire Ma. [3], Li A.W. [15] та Tezgiden-Cakcak Ya., Ataş U. [27].

However, the existing publications on our chosen topic and related ones still seem insufficient for practical implementation of the coaching approach to the formation of meta-skills in Ukrainian educational institutions. Therefore, we intend to highlight key provisions on the content and importance of meta-skills, to reveal the methodology of coaching in their formation and adaptation of knowledge seekers to modern information technologies.

**The objective of the study** is to highlight the range of theoretical provisions and methodological recommendations for the formation of meta-skills by means of coaching in the context of implementation of artificial intelligence in education.

The **methods** used are descriptive, functional and conversion analyses of foreign practices in a coaching approach to the formation of meta-skills in educational institutions.

The **methodology** is based on the philosophical ideas of Marty Neumeier's conceptualisation of meta-skills, John Whitmore's coaching, and the works of Marshall McLuhan, the founder of research on the impact of electronic information and communication technologies on society.

## **Results.**

### ***The realm of meta-skills in the interaction between humans and artificial intelligence technology.***

The transformations in all spheres of social life caused by rapid increase in the share of information technology and artificial intelligence, in particular, are rightly compared to a social revolution. However, as dialectics teaches, along with these achievements, there are threats associated with possible loss of human control over artificial intelligence. The mass media have spread the narrative that humanity has gained a technological monster, a dangerous competitor that will not only displace humans from the labour market but also enslave them. Only a highly intelligent person with leadership skills can protect society from the hegemony of technology. Therefore, education is faced with the task of forming a generation capable of ethical management of artificial intelligence and productive 'cooperation' with it. Thus, education is at the forefront of countering negative manifestations of artificial intelligence. Education, especially university education, is designed to form an elite with leadership skills and teamwork skills for projects of socio-economic development of the country using the potential of information technology, and now artificial intelligence.

However, humanity's 'cooperation' with technological innovations always takes place on the basis of reciprocity in influence. Back at the stage of the formation of electronic media, John M. Culkin, a researcher of M. McLuhan's work, noted: 'We shape our tools and then our tools shape us' [4, p. 53]. Mankind is doomed to live in an environment of rapid technological change, and therefore to improve itself every time, to renew its skills of adaptation to them. Modern technological reality requires skills of a larger scale than soft skills. Such skills, which are rightly called the skills of the new era, have been defined by foreign scholars as 'meta-skills'. The prefix 'meta' means that the skills are not purely situational 'how to act', but define a general principle of 'how to be'.

According to most sources, the ideology of meta-skills belongs to the writer, publicist, and businessman M. Neumeier, who saw it as a necessary condition for adaptation to technological change and social interaction. Today, the scientific literature does not provide a clear definition of meta-skills sufficient to orientate education towards their development. Therefore, we will try to deductively come to their conceptualisation in the context of education. At a general level, we are impressed by the following definition: 'Meta-skills are the foundation on which we build the world, the human attributes and qualities that allow us to use the knowledge we acquire for higher purposes and nobler aims' [23 p. 134]. Coach O. Kozakevych is

more concise. 'Meta-Skills, she writes, are the skills of a new reality: self-preservation and personal effectiveness management' [13]. Let us also agree with her definition of meta-skills as 'leadership skills of the future', since in the near future the demand for human leadership in the field of technological encroachment will only increase. In the field of social relations, meta-skills open up the prospect of elitism. We like the metaphor: 'Meta-skills are the key to human potential' [23, p. 133].

At the moment, we have to state that the generation of intellectuals formed according to the requirements of the rationalism of the Modern era has shown its confusion in the face of artificial intelligence. What happened long before the creation of artificial intelligence was warned against by M. Neumeier, who said: 'We have an unfounded fear that machines will someday start thinking like humans. What we should really fear is that humans have already started thinking like machines' [18]. Therefore, in order to prevent people from thinking like machines, education should take care of the formation of a generation of specialists who are not burdened by the rudiments of Modern rationality and stereotypical thinking, who are not afraid of technological challenges, and who are trained on the methodological platform of P. Feyerabend's 'anything goes' [6, p. 19]. Such formation should be carried out within the framework of the innovative paradigm of the superiority of one's own intelligence over machine intelligence, the unconditional dominance of spirituality, and humanism over insensitivity. Meta-skills are designed to provide the ability to get out of the custody of unambiguous determination by logic and into the space of creative generation of innovative ideas and their implementation in teamwork. Social interaction is a driver of the development of personal qualities: creativity, ethical virtues, and morality. They are purely human traits. While we cannot speak about the sociality and humanity of artificial intelligence. Let us recall that 'meta-skills are the foundation on which we build the world, human attributes and qualities...' [23, p. 134].

In his work 'Metaskills: The Five Talents for the Future of Work', M. Neumeier notes that a person should possess five "talents" (virtues - Y.S.) that will unlock the potential of ethical leadership of information technology, and not just passive adaptation to it. These 'talents', in his opinion, are 'feeling, seeing, dreaming, making, and learning' [18]. The system of these factors provides a future university graduate not only with the ability to ethically manage artificial intelligence, but also with leadership in teamwork, elitism, and success in social interaction. Therefore, it is appropriate to ask the question: is artificial, machine, or even biologically based intelligence capable of acquiring these virtues and performing a social role, and therefore are the fears that machines will someday start thinking like humans or even better justified? Definitely not, even if we take into account the possible self-learning of artificial intelligence, which is in fact just an improvement of software for searching and summarising available information. Such an assessment of artificial intelligence capabilities follows from the definition by, for example, O. Baranov. 'Artificial intelligence (AI),' he writes, "is a certain set of methods, techniques and tools, in particular, hardware and computer programs that implement one, several or all cognitive functions (CF) that are sufficiently equivalent to human cognitive functions" [2, p. 47]. A note of caution: 'sufficiently equivalent to human cognitive functions', which can be interpreted as a distant semblance of authentic intelligence. M. Babanova speaks about the capabilities of artificial intelligence in a more simplified, but essentially correct way. 'How does artificial intelligence learn about the world? It's very simple: IT companies upload everything they find on the Internet to AI systems' (Babanova). In this case, the generation of ideas by artificial intelligence is only a compilation of what is known, not creativity in its social sense. Therefore, even the very comparison of authentic intelligence with machine intelligence means a simplified understanding of the concept of 'Homo sapiens' and is not legitimate. The simplification is explained by the words of P. Feyerabend: 'The idea of ... a fixed theory of rationality rests on a too naive view of man and his social surroundings' [6, p. 18]. In other words, it is naïve to limit human 'reasonableness' to the logic of classical rationality like a machine algorithm without taking into account its capacity for extra-logical forms of thinking, creativity and sociality. Creativity, as we know, is a way beyond what is already known and acquired logically, creativity is predominantly an irrational process, and 'logic has always been opposed to creativity' [24, p. 15]. Artificial intelligence, which is based solely on formal logic, is in fact a program that can only imitate some of the intellectual functions of humans. This is confirmed by L. Jimenez and U. Boser: 'At its most basic level, AI is the process of using computers and machines to mimic human perception, decision-making, and other processes to complete a task' [10]. And as we know, imitation is only a certain approximation to the original. The rationality of human thinking is manifested through the prism of universal values, which are known to have changed significantly in the postmodern era. Therefore, 'we (educators - Y.S.) "need to prioritise the skills that define our humanity, rather than pursue old and outdated paradigms of knowledge, or compete with the machines we have created" [23]. This priority will be ensured by a new paradigm of rationality of human thinking. The postmodern imperative of S. Krymskyi should be taken as a guideline for educational methodologists in organising the formation of meta-skills – in the sense that 'the new rationality should be an affirmation of spirituality, an initiation to the higher meanings of human existence; it covers different types and types of world exploration: scientific, artistic, and practical...' [24, p. 17]. Does artificial intelligence profess universal human values? The answer is no. Therefore, the rationality of the formal logic of the machine

intelligence algorithm is devoid of humanity. Thus, S. Krymskyi's statement about the 'new rationality' defines the boundary between the creativity of a teacher as a coach and the routine role of artificial intelligence.

Thus, in analysing the interaction of authentic and artificial intelligence in the educational process, we should proceed from the capabilities of each in the formation of 'talents', namely socialisation using logical and non-logical forms of thinking of a teacher in the role of a coach and the search capabilities of artificial intelligence in the information support of coaching. Extrapolating the contradictory nature of intelligences to the content of M. Neumeier's five 'talents' of meta-skills, we must recognise the priority of the human, brought by a teacher, over the manifestation of artificial technology. Professional education should be combined with the assimilation of the highest values of human existence, embodied in the skills of ethical management of technological assistants, assistants in the field of professional and social activities.

We have taken a philosophical excursion into the depths of the ways of mastering reality in order to identify the points of intersection between authentic and artificial intelligence and to determine the methodology for developing meta-skills.

#### ***Features of the coaching approach to the development of meta-skills.***

Coaching technology is seen as a relevant innovation in shaping the personality of a university graduate capable of 'competing with the machines we have created'. 'The International Coach Federation (ICF) defines coaching as partnering with clients in a thought-provoking and creative process that inspires them to maximise their personal and professional potential' [22, p. 2]. Foreign experience in the formation of 'talents' that define meta-skills confirms the effectiveness of the coaching approach [22], [30]. Education is one of the spheres of social life where coaching has found its wide application and recognition as a means of unlocking the potential of humanity in the field of social relations. These qualities are actively noted, first of all, by foreign researchers of educational coaching. 'The essence of coaching is helping people, in this case, especially students, to change what they want for and help them go in the direction they want to go, encouraging them at every level to become who they want to be by building awareness, giving choices, and inspiring change' [22] "Coaching is recognised as one of the opportunities to significantly influence practice and teaching" [1, p. 491]. These are just two of the many characteristics of coaching that demonstrate its importance as a didactic tool.

Methodologically, coaching takes place in a partnership dialogue, as a result of which the student is guided by the coach (teacher) to succeed in the desired area of self-realisation. Coaching is not focused on theoretical professional training, but on the development of leadership, tolerance, empathy, and communication skills – the factors of being determined by the five 'talents' of meta-skills [18], [19]. The potential of humanity (read as spirituality) is achieved not at the rational level of comprehension of reality, but at the level of morality, religion, art, etc. In terms of the education programme, this means that the knowledge provided by natural and technical subjects should be organically consistent with the highest values of human existence. Therefore, in order to prevent 'humans from starting to think like machines' [19], educational programmes should include deepening humanitarian knowledge, especially in the philosophical foundations of the specialty. When designing educational coaching programmes, to a certain extent, it can be recommended to focus on developments [5], [22], [30].

The current metaphysical division of academic subjects by forms of matter movement or objects of study seems archaic. Under this paradigm of education, the student has no idea of the holistic picture of human interaction with the world of technology. The world is one, so only the integration of knowledge and the ability to go beyond science will give humans an advantage over artificial intelligence. In terms of the logic of its algorithm, artificial intelligence may someday match the logic of humans, but the irrational level of comprehension of reality is inaccessible to it by its very nature. It is the perfect modification of artificial intelligence that is functionally incapable of comprehending the multidimensional nature and contradictions of reality. Meta-skills based on the integration of rational and irrational knowledge into a holistic picture of reality ensure the dominant position of humans in their relations with any modification of artificial intelligence. Going beyond (transcending) rationality, humans are able to comprehend not only the technology itself, but also its capabilities as an alternative to their own intelligence.

However, is this an excuse for neglecting the potential of information technology, including artificial intelligence, in education and the development of meta-skills? Of course not. In the age of the information society, being means consuming information technology. It is impossible to imagine coaching without the use of the Internet resource, especially of social and humanitarian content. Podcasts are now widely used in both formal and non-formal education [11]. The interactivity of podcasts, which can be provided by artificial intelligence, plays a significant role in the technology of coaching for the development of meta-skills. In the course of training, a coach can use topic-oriented podcasts created by artificial intelligence. And this is not new. It's a novelty that artificial intelligence is proposed to be used as a coach. So we have to answer the question: is artificial intelligence capable of engaging in a dialogue with students at the level of a 'live' dialogue with a human? The legitimacy of this question is due to the discussions that are taking place at the level of scientists and IT practitioners about the possibility of replacing employees, managers, and even teachers with artificial intelligence. To answer 'no', the already mentioned differences in the ways of comprehending reality are

enough. But to be more convinced of the answer 'no', let's compare the subjectivity of 'living' intelligence and the objectivity of artificial intelligence in the role of a coach. 'Coaching is a collaborative process between the coach and the student. A coach is a pedagogue who helps the students to identify their strengths, weaknesses, and goals, and works with them to develop an action plan to achieve those goals' [5, p. 132]. Artificial intelligence is not capable of psychodiagnosing a student, let alone generating ideas for his or her self-realisation in meta-skills.

So, let us take a closer look at coaching from the perspective of socially conditioned subject-subject interaction – teacher-coach-student only through information technology.

***Psychological and pedagogical analysis of coaching as a tool for the formation of a personality adapted to 'cooperation' with artificial intelligence.***

First of all, let's focus on the pedagogy and psychology of coaching. The coaching approach involves both collective and individual training, similar to Socratic conversations in which students acquire 'talents'. Collective coaching deals mainly with life skills common to students as a social group, while individual coaching is based on a personality-oriented approach. When planning a training session, the coach should first identify the interests of the learner, his or her psychological characteristics: self-esteem (low or high), self-confidence (low or high), etc.

An important condition for the effectiveness of coaching in developing meta-skills is the stylistic technique (type of focus) chosen by the coach in asking questions, and even more importantly, in narration. The chosen way of conducting a dialogue is of paramount importance. The most acceptable for a coach is the position of an objective narrator (stylistic technique of focalisation externe, according to J. Jeanette's classification), according to which a student in the dialogue solidarises with the coach on the content of the narrative as his/her own awareness. According to the principle of mimetisation, the dialogue participant follows the logic of the coach's judgements and perceives it as his or her own train of thought. From the point of view of psycholinguistics, this technique is designed to take advantage of the recipient's latent tendency to bow to the coach's authority. When conducting professional training, a coach starts with general guidelines, gradually focusing on personalising meta-skills. The peculiarity of Socratic dialogues is that with well-formulated questions and instructions, the interlocutor determines the desired content of the 'talents'.

Returning to the question of artificial intelligence as a coach, but in the pedagogical aspect, we must acknowledge strong arguments in its favour, but as a possible simulacrum of dialogue. For example, E. Sabzalieva and A. Valentini suggested using AI tools as: Socratic opponent. Students can use AI to prepare for discussions or debates, where it will act as an opponent and communicate with students on a given topic, helping them to develop arguments' [14, p. 167]. Of course, the scope of artificial intelligence in education is quite broad [21, p. 9], including coaching, and will only expand over time. But it's not about the application, it's about his or her full value as a coach. In our opinion, the very question of identifying a coach with artificial intelligence seems incorrect, as it does not correspond to the pedagogical concept of what a coach-teacher is. After all, a teacher in the role of a coach for a student is not only a source of knowledge and a partner in dialogues, but also, most importantly, a moral role model, a widely erudite mentor, an identity marker, and a holder of other social qualities. In a professionally organised training, the student is mentally established in the attitude of networking as a way of being. Thus, a coach is a psychologist, a methodologist, an IT specialist, and a student's accomplice in developing meta-skills. Therefore, let's agree that 'the quality of the teacher is a decisive factor for the success of the student and that there is a clear recognition that traditional forms of professional development are ineffective' [1, pp. 491-492].

Therefore, it is safe to say that no artificial technology can replace 'live' communication with a teacher, whose coaching expands the range of ways of understanding reality, and guides students to the 'talents' of meta-skills of 'cooperation' with artificial intelligence. Therefore, we consider it acceptable to talk about the use of artificial intelligence only as a simulacrum of a Socratic opponent, or as a podcast generator or a student consultant in non-formal education on the topic of coaching.

The decline in euphoria about its 'intellectual' capabilities, which is currently observed in society, does not support the 'authority' of artificial intelligence in coaching. Warnings have been voiced against excessive trust in it. 'Experts tested the OpenAI models: GPT-3, GPT-4, and GPT-4o; Anthropic Claude 3 Opus, Gemini by Google, and Llama by Meta, as well as Mextal by Mistral AI, Dbrx by Mosaic, and Command R+ by Cohere. When AI was asked a question, it turned out that it 'clearly did not live up to expectations', that 'even the most complex large-scale language models (LLMs) can be stumped by a simple question' [20]. So does artificial intelligence deserve to be a tutor? The question seems to be rhetorical.

Without going into a detailed analysis of the possibilities of artificial intelligence in education, which are given by [8], [31], we note only the effect of the synergy of artificial and authentic intelligence in the formation of meta-skills. Let's agree that 'when two seemingly disparate elements are imaginatively poised, put in apposition in new and unique ways, startling discoveries often result' [17, p. 10]. We emphasise only the 'cooperation' of intelligences, because it is unacceptable to transfer the functions of a coach-teacher to artificial intelligence in education, as some managers imagine, without human involvement.

As for the demonisation of the next technological leap, pretentiously recognised as 'artificial intelligence', let us recall that humanity has successfully survived more than one technological upheaval. And artificial intelligence will eventually become a technological routine, and the prophecies of the apocalypse, whose falsity has a philosophical explanation, will also fade away. The words of M. McLuhan, written in the last century, are perfectly applicable to modern assessments of artificial intelligence: 'We are too prone to make technological instruments the scapegoats for the sins of those who wield them. The products of modern science are not in themselves good or bad; it is the way they are used that determines their value.' [16, p. 3]. These words suggest that the problem of artificial intelligence lies in the subjective perception of technological innovations, the value of which is determined by the extent to which a person is willing to cede his or her own powers to artificial intelligence. The meta-skills 'talents' acquired through coaching technology make it possible to productively 'cooperate' with artificial intelligence in a wide range of activities without being appointed 'scapegoats'. The analysis of the practices of harmonious combination of social and acquired intelligences using coaching technology leaves no room for doubt about its relevance to the principle of student-centred education. Without going into details, since student-centredness is not the subject of our study, we agree with V. Dmytruk that 'there are several benefits of educational coaching, including personalised learning and improved academic performance. Educational coaching is a personalised approach that tailors learning to the needs and goals of individual students, allowing them to learn at their own pace and in their own way' [5, p. 133-134].

And finally. It would be no mistake to say that interaction with information technology is now a way of life. However, not all teaching staff of Ukrainian universities have digital literacy at least at the level of students. This does not only facilitate the introduction of information technology in education, but sometimes leads to latent resistance to innovations such as coaching technology in the development of meta-skills. Currently, 'new contexts of digital environments that function as humanity-in-your-pocket require new approaches and new habits. Specifically, new habits of mind' [9]. Thus, the problem of how to form meta-skills of 'cooperation' with artificial intelligence in Ukrainian educational institutions is not objective, but subjectively determined by the ability of 'new habits of mind' to master the coaching methodology.

**Conclusions and prospects for further research.** Thus, the environment created by information technologies transforms the very subjectivity of its consumer. The era of artificial intelligence is the era of constructing a new technological reality, and meta-skills represent an intellectualism capable of building effective human relations with artificial intelligence in solving strategic tasks of social development on the basis of the reflected experience of losses from the rigid rationality of the Modern era. The generation of meta-skills, based on high moral and ethical principles, is able to pave the way for the country's technological rise in 'cooperation' with artificial intelligence without existential fear. The coaching approach to developing meta-skills is an educational innovation that will ensure that university graduates will be leaders in all areas of social interaction. In the future, artificial intelligence will become a common assistant to humans in their routine work.

Modern education in the paradigm of student's self-worth with meta-skills will become a factor in the formation of a national elite capable of ensuring the country's socio-economic growth and multiplication of national spiritual and cultural heritage.

The above-mentioned provisions are intended to facilitate the practical implementation of coaching as a tool of forming meta-skills in Ukrainian university education. However, the restrained optimism of our statements does not imply their unconditional acceptance – as you know, reliability is conditioned by specific realities. This study of the problem of education does not exhaust its full scope.

Currently, the field of artificial intelligence capabilities is not yet sufficiently explored. Therefore, to fully understand the role of coaching in the formation of meta-skills for 'cooperation' with artificial intelligence, a long period of observation and analysis of national implementation practices is required, and thus research needs to be updated every time.

### References

1. Alexandrova D. Coaching in Education: Experience from Abroad", *KNOWLEDGE - International Journal*, 2022. № 53 (3), pp. 491-494.
2. Baranov O.A. Internet of Things (IoT): regulation of service provision by robots with artificial intelligence. *Information and Law*, 2018. Vol. 4, (27), pp. 46-70. [https://doi.org/10.37750/2616-6798.2018.4\(27\).270610](https://doi.org/10.37750/2616-6798.2018.4(27).270610).
3. Claire Ma., Guevara M. The Use of Blended Learning System in Teaching Language. *TESOL International Journal*. 2021. Vol. 16. 4.4, pp. 184-223.
4. Culkin J. M. A schoolman's guide to Marshall McLuhan. *Education in America. The Saturday Review*, 1967. pp. 51-53, pp. 70-72.
5. Dmytruk V.A. Learning Strategies of Educational coaching in Higher Technical Education Institution". *Innovative pedagogy*, 2023. № 58, 1, pp. 131-134. <https://doi.org/10.32782/2663-6085/2023/58.1.27>.
6. Feyerabend P. *Against Method*. London Great Britain by Biddies Ltd, Guildford and King's Lynn. 1993. 279 p. URL: [https://monoskop.org/images/7/7e/Feyerabend\\_Paul\\_Against\\_Method.pdf](https://monoskop.org/images/7/7e/Feyerabend_Paul_Against_Method.pdf).

7. Grøndahl Glavind J., Montes De Oca L., Pechmann P., Sejersen D.B., Iskov T. Student-centred learning and teaching: a systematic mapping review of empirical research. *Journal of Further and Higher Education*, 2023. Vol. 47, 9, pp. 1247-1261. <https://doi.org/10.1080/0309877X.2023.2241391>.
8. Halaweh M. ChatGPT in education: Strategies for responsible implementation", *Contemporary Educational Technology*. 2023. № 15, (2), ep 421. <https://doi.org/10.30935/cedtech/13036>.
9. Heick T. How 21st Century Thinking Is Just Different, 2020. URL: <https://www.teachthought.com/critical-thinking/21st-century-thinking/>.
10. Jimenez L., Boser U. Future of Testing in Education: Artificial Intelligence, 2021. URL: <https://www.americanprogress.org/article/future-testing-education-artificial-intelligence/>.
11. Karimova Z.R. The Use of Podcasts and Video Casts to Improve Students' Oral Speech Competenc. *International Journal of Pedagogics*, 2024. Vol. 04. (04), pp. 14-18. <https://doi.org/10.37547/ijp/Volume04Issue04-03>.
12. Khatler, A., Thalaachawr, K., & Blyth, M. (2024). Student engagement and fostering ownership of learning. *Journal of Applied Learning & Teaching*, Vol. 7, 1, pp. 291-302. <https://doi.org/10.37074/jalt.2024.7.1.38>.
13. Kozakevych O. Meta-skills - there are skills of the new reality of self-saving and personal effectiveness management, 2023. URL: <https://ihub.lnu.edu.ua/meta-skills-navyky-novoyi-realnosti-samozberezhennya-ta-upravlinnya-osobystoyu-efektyvnisty/>.
14. Kyrpa A., Stepanenko O., Zinchenko V., Datsiuk T., Karpan I., Tilniak N. Artificial Intelligence Tools in Teaching Social and Humanitarian Disciplines. *Information Technologies and Learning Tools*. 2024. Vol 100, 2, pp. 162-179.
15. Li A.W. Synergizing with AI and AI-assisted Technologies in L2 academic writing. *TESOL Journal*. 2024. Vol. 15(4). <https://doi.org/10.1002/tesj.883>
16. McLuhan M. The Medium is the Message, 1964. URL: <https://web.mit.edu/allanmc/www/mcluhan.mediummessage.pdf>
17. McLuhan M., Fiore Q. The Medium is the Massage. An invento - ry of effecte, Produced by Jerome Agel, 2014. 160 p. URL: [https://designopendata.wordpress.com/wp-content/uploads/2014/05/themediumisthemassage\\_marshallmcluhan\\_quentinfiore.pdf](https://designopendata.wordpress.com/wp-content/uploads/2014/05/themediumisthemassage_marshallmcluhan_quentinfiore.pdf)
18. Neumeier M. Metaskills: Five Talents for the Future of Work, 2013. URL: <https://www.amazon.com/Metaskills-Five-Talents-Future-Work/dp/0997410280>.
19. Neumeier M. Metaskills: Five Talents for the Robotic Age, 2012. URL: [https://www.goodreads.com/author/quotes/168221.Marty\\_Neumeier?page=2](https://www.goodreads.com/author/quotes/168221.Marty_Neumeier?page=2).
20. Portaltele. An easy logical question has stumped even progressive AI. *Ukrainian telecommunications portal*, 2024. URL: <https://portaltele.com.ua/news/technology/proste-logichne-pitannya-postavilo-v-gluhij-kut-navit-prosunutij-shi.html>
21. Sabzalieva E., Valentini A. ChatGPT and artificial intelligence in higher education. Quick start guide. *UNESCO*, 2023. URL: [https://www.iesalc.unesco.org/wp-content/uploads/2023/04/ChatGPT-and-Artificial-Intelligence-in-higher-education-Quick-Start-guide\\_EN\\_FINAL.pdf](https://www.iesalc.unesco.org/wp-content/uploads/2023/04/ChatGPT-and-Artificial-Intelligence-in-higher-education-Quick-Start-guide_EN_FINAL.pdf).
22. Seemann P., Stofkova Z., Poliaková A., Binasova V., Loučanová E. Coaching Approach as a Sustainable Means of Improving the Skills of Management Students. *Administrative Sciences*, 2024. Vol. 14, 6. <https://doi.org/10.3390/admsci14060114>.
23. Senova M. Meta-skills Are the Key to Human Potential. *Journal of Behavioural Economics and Social Systems*, 2022. Vol. 2, 1, pp. 133-137.
24. Stezhko Yu. Vision of Information in the Computer Oriented Educational Technologies and its Explication in the Imperatives of Postmodernism. *Information Technologies and Learning Tools*, 2019. Vol. 71, 3, pp. 12-22. <https://doi.org/10.33407/itlt.v7i3>.
25. Stoyanova V. Foreign Language Training in Non-Formal Education as a Resource for Development of Digital Media Literacy. *KNOWLEDGE - International Journal*, 2024. № 63 (5), pp. 579-583.
26. Sullivan M., Kelly A., McLaughlan P. ChatGPT in higher education: Considerations for academic integrity and student learning. *Journal of Applied Learning & Teaching*, 2023. Vol. 6, 1, pp. 31-40. <https://doi.org/10.37074/jalt.2023.6.1.17>.
27. Tezgiden-Cakcak Ya., Ataş U. Becoming and being a critical language teacher educator: A duoethnography. *TESOL Journal*. 2024. Vol. 15.4. <https://doi.org/10.1002/tesj.855/>
28. The Law of Ukraine. On Amendments to Certain Laws of Ukraine Regarding the Improvement of Educational Activities in the Field of Higher Education. *Vidomosti Verkhovnoi Rady Ukrainy*, 2020. 24p.
29. Weissman J. ChatGPT is a plague upon education, 2023. URL: <https://www.insidehighered.com/views/2023/02/09/chatgpt-plague-upon-education-opinion>.
30. Whitmore J. Coaching for Performance: Growing Human Potential and Purpose-The Principles and Practice of Coaching and Leadership. 5th Edition, Nicholas Brealey Publishing, London, 2017. 240 p. URL: [https://www.google.com.ua/books/edition/Coaching\\_for\\_Performance/Mf98DAAAQBAJ?hl=ru&gbpv=1&dq=inauthor:%22John+Whitmore%22&printsec=frontcover](https://www.google.com.ua/books/edition/Coaching_for_Performance/Mf98DAAAQBAJ?hl=ru&gbpv=1&dq=inauthor:%22John+Whitmore%22&printsec=frontcover)
31. Yu H. The application and challenges of ChatGPT in educational transformation: New demands for teachers' roles. *HELIYON*, 2024. <https://doi.org/10.1016/j.heliyon.2024.e24289>.

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