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Systematic review

A Scoping Review of Recent Developments Linking Artificial Intelligence and Lifelong Learning

Summary: *In this scoping review, we have been guided by questions on the nature of the effects of Generative AI on lifelong learning in terms of its advantages and shortcomings, especially since the proliferation of AI technologies over the last half a decade. We have also highlighted major lifelong learning and artificial intelligence concepts discussed in literature, as well as reviewed current conceptual debates and tensions, while concentrating on higher education and work settings. Our findings are organized by three themes: 1) digitalization and technologication of lifelong learning; 2) self-directed learning, GAI and ChatGPT, and global contexts; and 3) human development and capability approach to lifelong learning. We draw on important implications for future empirical research directions, more fine-grained systematic reviews building on this preliminary work, and organizational considerations. We uniquely add to discussions of global perspectives in the realm of AI and lifelong learning and instigate probing into deeper human ontological processes behind learning.*

Keywords: *lifelong learning, generative AI, ChatGPT, andragogy, artificial intelligence*

Over the last half a decade, there has been an extraordinary emergence of generative artificial intelligence (GAI) applications and models, such as ChatGPT, 3D models, code generation tools, GAI agents, Google Gemini, or Perplexity, altering the ways in which we engage in the digital world, as well as learn across our life. Excitement, inquisitiveness, and a kind of disruption have entered industry and academia as regards the usage of these GAI implementations and various effects that they may have on human learning, as well as our professional, personal, and social experiences (Asad & Ajaz, 2024). "Generative AI is a branch of artificial intelligence that concentrates on producing… content…" (Asad & Ajaz, 2024, p. 508), drawing from patterns and relationships across very large datasets. The generated

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output could be textual, visual, audio, and video, to name some examples.

As artificial intelligence (AI) continues to permeate work settings and education, it will be important to understand how we interact with it, learn, work, professionally develop, and fundamentally orient ourselves towards it. Lee and Park (2023) argue that:

> … many organizational employees may feel apprehensive about the rapid rise of AI, as they lack the necessary understanding and skills to effectively harness these new intelligent [implementations] in their workplaces. Compounding this anxiety is the mounting pressure to implement AI within their work and services, often without fully grasping the underlying mechanisms and consequences (p. 2).

It is these and similar realities that prompted us to engage in a scoping literature review for a preliminary sense of understanding what the described developments mean for lifelong learning and the kinds of effects they produce within the confines of work, education, or even the larger society. Across studies, multiple authors have found sets of advantages and challenges associated with usage of AI. To illustrate, AI has a large computational power, process optimization capabilities, augmenting agile human decision making, flexibility, personalized training and development, and automation of more time-consuming or repetitive tasks (Chowdhury et al., 2023; Jarrahi, 2019). In contrast and according to Ardichvilli (2022), Beane (2019), and Diller (2024), there have been some less advantageous factors associated with AI, such as oversight of data security and confidential records, ethical considerations, management of emotions and discrepancy with empathic accuracy (appropriate responding to emotional states), task-chunking, and loss of expertise due to automation. How do these realities connect to lifelong learning?

Lifelong Learning

"Lifelong learning [LLL] can be understood as the collection of events throughout an individual's lifetime that results in the integration of new practices into said individual's life" (Palenski et al., 2024, p. 1217, in reference to Jarvis, 2007). LLL also "refer[s] to processes and systems supporting learning throughout adulthood and work life" (Poquet & de Laat, 2021, p. 1696). People learn to improve their knowledge, skills, and attitudes (KSAs), motivated by personal, employment, or societal reasons. One of those reasons is AI competence. Research has so far focused more on AI's increasing human efficiency and learning, and AI acting as a peer, colleague, or tutor, and less on how people are living, working, and learning alongside AI in a larger sense and context, beyond instrumental or economic motivations (Palenski et al., 2024). This view builds on andragogical perspectives of individual learning and autonomy and invites accounting for extensions at the level of societal (and organizational) structures within which adult learners are nested - a view that is reminiscent of institutional structure-agency interactions: "The assumption is that structures of practice present both constraints and possibilities for action to persons…" (Penuel et al., 2016, p. 31). Social practice theory helps us understand distributions of human engagement in the learning process more comprehensively (Penuel et al., 2016) by attending to situated/embedded agency (Dreier, 2008; Ortner, 2006) in such a way that dialectical relationships between social actors alternate and articulate. To exemplify, even within communities of practice, there are dialectics and scrutiny of how technology will be incorporated in a given context (of practice) rather than being immediately adopted without such "screening" and alignment with values, mission, vision, and goals of that community.

Lee and Park (2023) point us to important concepts which are equally relevant to lifelong learning and AI developments, namely: 1) AI literacy, that is, the existence of gaps in how well-versed

lifelong learners are in knowing how AI works and how to use it, and what we should do about it; 2) AI substitutability and over-reliance on AI (i.e., hollow intelligence); 3) AI accountability for decisions or performance, in a sense of knowing who or what is responsible when something goes right or wrong, as well as setting accountability boundaries around multiple stakeholders, such as designers, programmers, suppliers, users of AI, and when examining outputs; Palenski and colleagues' (2024) thinking aligns with this concept in a way that it compliments it by considering political and normative AI interventions in LLL; and 4) AI implementability, primarily aimed at answering the question of whether organizations adopt AI just to have it or for real functionalities; or whether such adoptions are premature or not, net of cultural, psychological, managerial, social, and political effects associated with preparedness for AI adoption. The fourth concept is related to what Parker and Grotte (2022) mark as meeting the needs of employees and organization versus only staying abreast of new technologies. It is arguably complementary to learning alongside AI, beyond instrumentally, per Palenski et al. (2024). Furthermore, AI can be conceived as a "constantly moving, sociotechnical collection of different meanings and practices attributed to it by the different stakeholders and other actors within the network" (Eynon & Young, 2021, p. 169).

Against this backdrop and the factors described in mind, our contributions in the scoping review are two-fold: firstly, to reveal emerging themes across our guiding questions presented below and, secondly, to pave the way for and invite empirical quests and systematic reviews prompted by our precursor findings.

Guiding questions:

1. What is the nature of GAI effects on lifelong learning, especially since the proliferation of GAI related technologies from around 2020, in higher education and organizations?

2. What major concepts in the realms of AI/GAI and LLL are discussed in literature?

3. Are there any conceptual debates and tensions? How are they described and what implications could be drawn from them?

Method

In an effort to answer our guiding questions on GAI and LLL interconnections, we consulted several databases many of which are frequently used in our field, namely: Academic Search Premier, Pro-Quest Central, Eric (EBSCO), Emerald Insight research platform, and Google Scholar. We utilized keywords, such as: "lifelong learning," "artificial intelligence," "adult learning," "generative AI," "Chat-GPT," and "andragogy." Because of rapid changes in new technologies (e.g., ChatGPT and other GAI-based), especially over the last five years per Asad and Ajaz (2024), our aim was centered on more recent publications, over the last decade, and especially its latter part. Our focus was on organizations and higher education. We have applied a scoping type of literature review. In light of the criteria described above when searching for the literature, our final sample of articles counted 25 peer reviewed papers and conference proceedings, narrowed down from 129, upon elimination of any non-relevant ones based on abstracts and titles, followed by an advanced exclusion of reading through articles. We did not include articles focusing on children. We hope that this preliminary scoping review could serve as a precursor to future systematic reviews with other potentially more refined questions, which agrees with many authors' views on scoping purposes and how it can inform more elaborate and focused further research (Arksey & O'Malley, 2005; Munn et al., 2018; Tricco et al., 2016). We were also interested more broadly in the kinds of characteristics, concepts, and emerging effects around GAI and lifelong learning covered in the selected studies rather than in a strictly critical engagement. Analytically, we

employed thematic analysis (Merriam, 2009) across emerging patterns from our review.

Thematic Findings

Our analyses of the literature culminated in three overarching themes, namely, 1) digitalization and technologication of LLL, 2) self-directed learning (SDL), GAI and ChatGPT, and global contexts, and 3) human development and capability approach, each discussed below in more detail, and per Figure 1.

Figure 1. Thematic Findings
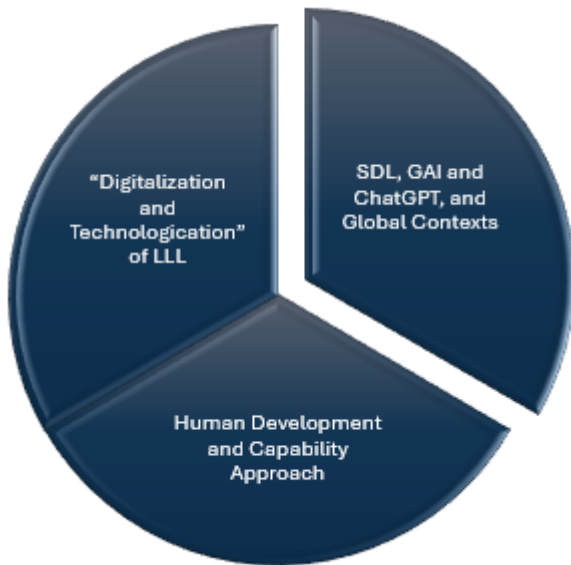
"Digitalization and Technologication" of LLL

Tomaszewska (2023) posits that digitalization and technologication of LLL due to GAI, and more specifically ChatGPT, invite both opportunities and responsibilities for their effects on LLL. First, LLL brings opportunities for holistic and comprehensive development across one's life thanks to a suite of learner experiences and cultivation of learning skills

and new knowledge (p. 869). LLL affords "a broad understanding of development that enables adaptation to the changing conditions of societal functioning. The concept of LLL signifies the maintenance of continuity and systematicity in the learning process while emphasizing its multidimensionality and versatility" (p. 869). Having painted such LLL context helps us understand the facilitating or hindering nature of the effects of GAI tools on learning and cultivation of knowledge in such multidimensional and versatile space.

ChatGPT has facilitated lifelong learning in educational settings, such as reducing time to produce desired outcomes both for instructors (e.g., instructional and assessment materials, initiating theoretical topics) and learners (e.g., time on task, supporting individuals with special educational needs, improving programming code, condensing lengthy notes). However, there are challenges associated with ChatGPT, such as incorrect answers, superficial content evaluations, linguistic errors in translations, issues with contextual background due to incomplete datasets, or lack of verifying of output, which is particularly troubling for novice learners without much background knowledge**.** Instructors are concerned about the originality of submitted work/assignments and critical thinking discrepancies in learners, while educational institutions are looking into developing ethical guidelines and policies, along with conditions and limitations of AI use, and continuous quality improvement. On balance, Tomaszewska (2023) groups AI in education into: automation of time-consuming educational processes; chatbots and digital assistants which spare learners from their own searching through the internet or knowledge databases (these are similar to chatbots for training and development in organizations); personalized learning modules offered by an "e-learning concierge" to fit learner interests, positions, educational history, and competence gap identification; authoring tools for creating and publishing digital courses, multimedia presentations, and simulations, without the necessity of having coding skills; and

management and optimization of training activities, employee development paths, and company personnel needs.

With digitalization and technologication of LLL, Zhang et al. (2024) caution that usage of AI may create dependency, manifested as taking shortcuts and reduced independent thinking, as some examples. AI dependency may also manifest in daily life and social interactions: "This form of dependency is marked not only by the overutilization of AI-assisted tools but also by a significant psychological dependence on these technologies" (p. 3). Interestingly, learner self-efficacy (capacity to perform/master a task) did not directly affect problematic AI usage behavior, but that relationship was mediated by academic stress; that is, when students with low self-efficacy were under pressure, they still used AI (p. 9). Increased performance expectations were directly related to greater AI dependence, such as on ChatGPT. There is also a paradoxical effect of GAI dependence on learning (Zhang & Xu, 2025) in that its usage could increase learner confidence and efficiency but also amplify their dependance on tools. That is why, the authors suggest, it would be important to have a learning landscape where technology is used to augment learning processes rather than compromise independent LLL and psychological resilience.

In the Zhang et al. (2024) study, one of the most curious findings was that learners, under stress, sought relief using technologies whether for conceptual understanding, tutoring, or research and emotional help. How could instructors alleviate these effects? One of the ways is through instructional strategies around conceptual explanations of material. Learners may also be anxious when it comes to grasping and keeping up with emerging technologies or job replacement and upskilling upon finishing education and looking for jobs, such as in various spheres of telemarketing or market analysis (Chen, et al., 2024). In light of these developments, there are differing views among andragogists - some seeing digitalization of LLL as a revolutionary process while others perceive it as a simpler kind of educational evolution, per Tomaszewska (2023).

Self-directed Learning (SDL), GAI and ChatGPT, and Global Contexts

One of the prominent themes in literature centers around the andragogical concept of self-directed learning, simultaneously viewed as a critical skill. More precisely, studies have examined usage of ChatGPT as a virtual tutor in asynchronous educational environments. Learners' lack of adequate skills for searching for online resources could impede self-directed learning, so that ChatGPT could consequently assist learners, firstly, in goal-setting and finding resources, as well as generating individualized learning plans, and monitoring and reflecting on learner experience (Lin, 2024). Although the usage of ChatGPT, in particular, can be facilitative and decrease cognitive load in learning (Chang et al., 2024), it is important to balance engaging learners with human instructors besides just ChatGPT. The transition from human-centered to machine-driven processes "raises concerns about the potential loss of intergenerational wisdom… [and] the sustainability of our current educational paradigms" (Storey & Wagner, 2024a, p. 11), as well as concerns that "machine-driven approaches might deliver material to the learner rather than working with the learner to encourage critical thinking and innovation" (p. 11). From a learning science stance, it is vital that educators and AI-designers collaborate around these factors, so that AI can boost self-regulation and experiential learning and support lifelong learning.

Another concern is related to global digital gaps and the debate between technology proponents and their critics, where the former "assume that newer technologies will enhance lifelong learning whereas its critics argue that the learning gap… will widen… [and that] given the exist-

ing global inequalities, its benefits will continue to be disproportionate" (Regmi, 2024, p. 433). In consideration of life-wide and life-deep learning, Regmi (2024) argues that epistemic exclusion (lack of indigenous perspectives), digital inequality (lack of access to learning technologies and digital competencies), and artificial community are limitations of learning technologies, diminishing touching points with LLL. Using a concrete example of the education system in Nepal, it is influenced by international organizations and LLL global goals, with an aim of promoting LLL and the approach that individuals are responsible for their own learning and being competitive and readier for the job market. However, this more economic and human capital-oriented approach may be devoid of taking into consideration contextual factors, such as poverty and economic hardship. Regmi (2024) argues that:

> The humanistic model of lifelong learning – that aims to provide learning opportunities for all by removing the barriers posed by one's age, gender, race or socioeconomic status – has been ignored by corporate employers... (p. 435)

Although GAI (and ChatGPT) have presented technological breakthroughs, scholars continue to question what constitutes knowledge, the process of its construction, and knowledge producers' identities (Bennett & McWorther, 2021; Regmi, 2024). With all the various benefits of learning technologies, it is still questionable whether they incorporate a multitude of epistemologies that inform people's learning and understanding of society. Using the concept of self-regulation, there is a potential that learning technologies could increase self-regulated learner motivation, even in ways that others could vicariously benefit from those learners as role models "to take the lead in online interactions. Even though the tasks of identifying local, communal, and aboriginal learning contents might overburden the instructors, this could provide epistemological spaces for students to appreciate those culturally rich learning contents" (Regmi, 2024, p. 441).

The next theme delves into the realm of capability approach to human development, specific to human agency and structural interplays, as an illustrative conceptual case in the technocentric and humanistic debate space.

Human Development and Capability Approach

The human development view values human agency and draws attention to systemic constraints that prevent people from taking on opportunities. In many places in this scoping review, we have heard about efficiency and increased speed of practices through technologies, however, attending to deliberate human needs, activities, and well-being is equally important. A special instance within the broader human development umbrella is the capability approach (CA), originally conceived by Amartya Sen. The capability approach recognizes human power and constraints within structures when it comes to learning (Sen, 1985). Simply put, it is about "what people *can do* with *what they have* towards their *moral right of well-being*" (Poquet and de Laat, 2021, p. 1702). The focus is on capabilities as in freedom and opportunities available to learners, and on functioning taking into account attitudes, resources, and activities deemed important by the learners. Learners may have the same opportunity but be in different socioeconomic statuses which may take away from the choices they make about the opportunity and what they can do to attain the same functioning.

Poquet and de Laat (2021) caution against solely a technocentric view on learning by commercial vendors and human capital as an economic investment through skill development. Rather, they support the capability approach to human development: "Data used to support learning can focus on learner agency and systemic factors that enable and constrain lifelong learning" and "LLL interventions should focus on negotiated value creation" (p. 1696) in workplaces and education. For example, in corporate settings, individual learner analytics obtained

from AI technologies are often used for performative metrics and knowledge acquisition to carry an investment, all the while "workplace technologies afford to facilitate learning as a social practice…" (p. 1703). These findings imply the importance of considering learner analytics for employee professional development and augmented learning, as well. In workplaces, employees learn structurally, as well as incidentally, when presented with opportunities. In the interplay of employees and workplaces/organizations, learners make choices about their learning, form identities while socializing into practices and communities, all the while co-existing with organizational/institutional interests in what gets to be learned. "Capability approach to LLL refocuses how personal and institutional interests are shaped, iterating the individual agency and its freedom to act in learning, as well as adding a new dimension of responsibility for equity to the institutional agenda for developing its employees" (p. 1697).

Within this third theme, we find illustrative connections from organizational contexts as related to automation nuances. As much as GAI can be beneficial in many ways, it can also contribute to affecting humans to feel as by-standers during automation, risking cognitive complacency and deskilling since passively carrying on systems and decisions rather than using them informatively, and loss of expertise (Jarrahi, 2019). Automation involves carrying system directives and engaging in decomposed or less complex tasks, preventing a person from seeing the bigger picture. This takes away from a more cohesive and comprehensive understanding across the spectrum of learning tasks. Regarding expertise, that is, superior know-how cultivated through formal, informal, and incidental learning, experts capitalize on complex mental models, tacit knowledge in specialized domains, engagement in deliberate practice and experimentation, seeing the whole process of learning (Ericsson, 2009), and intuitive grasp over pattern recognition. However, as a result of automation, in investment banking, for example, more novice associates may no longer learn through interactions with senior colleagues/partners who alternatively receive AI-generated reports, without explaining various learning aspects to less experienced employees (Ardichvilli, 2022; Beane, 2019). Automation can lead to co-workers' isolation. Developing systems thinking skills to balance against task chunking (Sutton et al., 2018) and over-reliance on simplified input-output models will be important. On the whole, and in view of human capability development, it will be vital to cultivate a culture of organizational lifelong learning and accordingly modify performance management systems, showing how a learner's role fits within the larger learning process affected by micro-tasking and avoiding missing other factors of performance, even beyond individual:

> AI has the potential to identify areas of lower performance based on the achievements of employees, but it would struggle to process the underpinning factors *leading to* [emphasis added] low performance and therefore it could interpret a need for action in instances that may be temporary or affected by external variables. (Chowdhury et al, 2023, p. 9)

Discussion and Conclusion with Implications

In this scoping review, we have been guided by questions on the nature of the effects of GAI on lifelong learning in terms of both its advantages and shortcomings, highlighted various concepts related to AI/GAI and LLL, and presented some theoretical tensions and debates currently taking place and what they mean for learners, organizations, and educational institutions. Being that this is a scoping review, we hope that we have shed light on three themes arising from our literature analysis, namely, 1) digitalization and technologication of LLL; 2) self-directed learning, GAI and ChatGPT, and global contexts; and 3) human development and capability approach to LLL. Our paper gradation unfolded from digitalization effects on LLL and major andra-

gogical concepts during GAI use to automation extensions and juxtapositions of efficiency and human development outcomes and aspirations.

Major takeaways from the first theme focused on facilitating and hindering nature of the effects of GAI tools as a result of digitalization of educational and work spaces. GAI-based tools can readily generate lesson materials and tests, simulations, immersive experiences, graphics, and assessments, which are useful in educational and vocational settings (Storey & Wagner, 2024b). However, AI dependency was another major highlight of the first theme, particularly among learners with low self-efficacy using ChatGPT, mediated by academic stress. The implications from this theme point to having learning landscapes in which technology is used to augment learning processes rather than replace them or compromise independent LLL and learner resilience (Zhang & Xu, 2025). Probing into short- and long-term learner confidence and learning transfer effects using AI-augmentation (e.g., from classroom to applied contexts, or from organizational interventions) would be additionally beneficial. Yet another implication is that artificial intelligence in adult education pushes instructors in directions of developing AI literacy and redesigning their courses but also engaging in AI technologies in ways that still balance long-lasting principles of learning and teaching and ethical responsibilities in AI use.

The second theme began with facilitative effects of ChatGPT on self-directed learning. Nevertheless, it was not without consequences. GAI-driven processes raised concerns about the sustainability of present educational paradigms *en face* GAI-based tools merely delivering material instead of boosting critical thinking, self-regulation, and taking time with learning. Therefore, it will be important to pay attention to these GAI effects and particular learning concepts. The second theme also included considerations of digital gaps in global contexts, lack of indigenous perspectives, variations in access to learning technologies and digital competencies, which posed challenges to more fully en-

gaging in lifelong learning, as it may be the case in more technologically advanced parts of the world. Future studies (including comparative) should concentrate on specific regions of the world and probe more deeply into the named challenges and what would be needed to address them. Similar to the concept of augmentation in a complementary sense of AI and human capabilities, Chowdhury et al. (2023, p. 9) note that "the capability of AI needs to be combined with the capacity of humans to… understand… global, organizational, and personal context[s]."

The third theme brought to light that "new technologies, based on their presence, data collection, and impact on human cognitive and social practices, affect human learning and work. At the same time, the impact o[f] technologies on human ontological processes has been largely unexamined" (Poquet & de Laat, 2021, p. 1701). The implication is that it would be useful to consider how to frame LLL amidst emerging AI technologies in workplaces and education, such as an intentional human development activity besides an instrumental one. What would this mean for teaching and learning, employee development, and organizational and educational strategies around LLL and artificial intelligence? Furthermore, having an open debate about learner agency and systemic opportunities, including additional relevant frameworks and approaches, would be beneficial, especially as individuals and organizations have questions surrounding the proliferation of technologies during the last several years and the number of tools that have entered the scene. Learners may feel pressured to embrace them without clear goals and purposes in the context of their daily and work lives.

Future research quests could delve into how AI disrupts or enhances collaboration, teamwork, critical thinking, solving organizational problems, management, and leadership and what such impacts mean for individual, organizational, and societal learning and development. One of the ways could be situating a quest in an organizational de-

velopment framework of the type of Rummler and Brache's nine box model, focusing on relevant individual, process, and organizational levels, with goals, design, and management at each. We also align with Ovesni, Matović, & Janković's (2019) view that managers are important intermediaries in organizations in a sense that they should be able to understand and communicate the role of learning in organizational contexts because of the intricate relationship between the use of technologies at work and employee learning. Thus, we encourage this endeavor, including in organizational strategizing.

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МАПИРАЊЕ ЛИТЕРАТУРЕ О НАЈНОВИЈИМ САЗНАЊИМА О ВЕЗАМА ИЗМЕЂУ ВЕШТАЧКЕ ИНТЕЛИГЕНЦИЈЕ И ЦЕЛОЖИВОТНОГ УЧЕЊА

Сврха овог рада је да се боље разуме утицај генеративне вештачке интелигенције (енг. Generative Artificial Intelligence – GAI) на целоживотно учење (енг. Lifelong Learning – LLL) у смислу предности и мана све веће употребе AI технологија у последњих неколико година. Наш циљ је такође да истакнемо главне концепте и карактеристике у области AI/GAI и LLL, као и да осветлимо концептуалне/теоријске тензије или дебате у контексту ових технологија, које ничу таквом брзином да често не успевамо да разумемо њихове ефекте или функционисање. Значај овог рада је у томе што скреће пажњу на питање шта обим употребе GAI значи за развој знања, вештина и психолошке регулације ученика усред аутоматизације и повећања вештачке интелигенције. Рад је такође претходница будућим истраживањима која би могла дубље да испитају резултате нашег истраживања и да укључе друштвено, развојно и технички оријентисане теоријске оквире у проучавање (G)AI и LLL. Користили смо метод мапирања литературе (енг. scoping review) (Arskey & O'Malley, 2005; Munn et al., 2018; Tricco et al., 2016) у претраживању релевантних база података, као што су Academic Search Premier, ProQuest Central, Eric (EBSCO), Emerald Insight, и кључне речи попут „lifelong learning" „artificial intelligence", „generative AI", „ChatGPT" и друге важне појмове из главних истраживачких питања. Фокусирале смо се на новије публикације, највише на оне објављене у другој половини претходне деценије, и то оне које се баве високим образовањем и организацијама. Занимале су нас и везе између GAI и LLL и концепти који су откривени у одабраним радовима и истраживањима, без стриктно критичког осврта на сама истраживања. У прегледу литературе применили смо тематску анализу (Merriam, 2009) настајућих GAI-LLL образаца. Налази истраживања организовани су у три тематске целине: 1) дигитализација и технологизација целоживотног учења; 2) самоусмерено учење, GAI и ChatGPT, и глобални контексти; и 3) перспективе људског развоја и развоја способности у целоживотном учењу. Откриле смо да је важно успоставити равнотежу између претераног ослањања на AI/GAI, критичког мишљења и дубљег учења. Преглед релевантних извора је указао на појаву (дис)континуитета у процесу учења, од једноставнијих до сложенијих задатака, до којег би могло често да дође због аутоматизације, нарочито науштрб вредних прилика за неформално учење међу ученицама на почетним и вишим нивоима. Све у свему, улога целоживотног учења појачана је инсистирањем на интеграцији вештачке интелигенције на радном месту и у образовању, што ће од ученика захтевати већу самоефикасност и саморегулацију. Међутим, у сфери дебата о вештачкој интелигенцији нека питања и даље остају без одговора. Осим питања да ли су AI/GAI заиста револуционарне технологије или само, као било која друга технологија, имају ефекат

новине, остаје неразрешено и питање дигиталног јаза широм света, ако се узму у обзир друштвени и образовни услови у којима људи живе. Стога ће размишљање о образовним (и организационим) интервенцијама, осим техничко-структурних, бити од суштинског значаја. У раду дајемо посебан допринос дискусијама о глобалним перспективама у области вештачке интелигенције и целоживотног учења и подстичемо испитивање дубљих људских онтолошких процеса који се одвијају у позадини учења. Интеграција аутохтоних перспектива и приступа људском развоју била би важна област за проширивање и прилагођавање теоријских и концептуалних смерница. На пример, добри кандидати за тако нешто су приступ заснован на способностима који подржавају Поке и Де Лат (*Poquet & De Laat, 2021*) и способност коришћења вештачке интелигенције, контекст коришћења (аутоматизација, аугментација), карактеристике људске радне снаге, и организациони оквир који предлажу Чаудери и др. (*Chowdhury et al., 2023*). Било би корисно испитати краткорочне и дугорочне добити од учења (нпр. самопоуздање ученика и трансфер учења) употребом AI аугментације (нпр. од учионице до примењених контекста или од организационих интервенција), док би се и даље балансирали принципи подучавања и учења и етичка одговорност у вези са употребом вештачке интелигенције.

Кључне речи: целоживотно учење, генеративна вештачка интелигенција, андрагогија, ChatGPT, вештачка интелигенција