Educational Administration: Theory and Practice
2024,30(4), 2201-2210
ISSN:2148-2403
https://kuey.net/

Research Article

Positioning AI as a Partner in Work and Action: A Library Research Journal

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Citation: Mariyono Dwi, Akmal Nur Alif Hidayatullah (2024), Positioning AI as a Partner in Work and Action: A Library Research Journal,*Educational Administration: Theory And Practice*, *30*(4), 2201-2210
Doi: 10.53555/kuey.v30i4.1454

ARTICLE INFO

ABSTRACT

Purpose: This study explores the potential and challenges of AI in professional settings, focusing on its ethical, socio-economic, and practical implications, and proposes strategies for fostering human-AI collaboration.

Design/Methodology/Approach: The systematic literature review methodology analyzes academic papers, books, reports, and articles on AI's applications, challenges, and ethical considerations across various electronic databases.

Originality/Value: This study provides a comprehensive overview of AI integration in collaborative work environments, highlighting its benefits and challenges, and emphasizing the need for responsible deployment and proactive policies.

Findings: The literature review highlights the challenges of integrating AI into collaborative work environments, including ethical concerns, algorithmic bias, and job displacement, but also highlights potential opportunities for improved human-AI collaboration.

Key Words: strategies; human-AI collaboration; integrating AI; collaborative work; job displacement.

1. Introduction

Artificial intelligence (AI) has revolutionized technology by creating intelligent computers with human-like traits. It uses symbols for knowledge representation and processes information using heuristic methods. Research aims to create four systems: thinking humanly, acting rationally, acting humanly, and thinking rationally.

Numerous studies indicate that AI research will also be conducted to identify short-term and permanent work assignments, while long-term assignments will be conducted to improve productivity (Arslan et al., 2022; Braganza et al., 2021; Rampersad, 2020), threatens workers' survival (Chuang, 2020), as well as the level of labor uncertainty (Cave & Cammers-Goodwin, 2024; Zirar et al., 2023). Large-scale changes to the integration of AI with human work, such as driverless vehicles (Chuang & Graham, 2018) not yet completely free from human control. The worker's fear of losing his job while working with AI may come from an over-perception of excessive AI capabilities at work (Willcocks, 2020). In other circumstances, though, human workers may be wary of AI judgments, suggestions, and reactions because they believe AI that improves their capabilities is only being watched over and spied on by more sophisticated systems (Borges et al., 2021).

Even if there are persistent issues that could hinder work-in-practice research ((Vishal Agarwal, Michael Chui, Kaushik Das, Vivek Lath, 2019)), academic literature (Jaiswal et al., 2022; Wilson & Daugherty, 2019) can enhance the AI coexistence between employees and work environments. This collaboration illustrates a proactive approach to AI development in the workplace, encouraging the business world to exercise caution when carrying out AI-related tasks (L. Li et al., 2019). This study also indicates that businesses must actively safeguard employees' interests and carefully consider implementing technology that enhances rather than undermines workers to meet consumers' constantly changing needs (L. Li et al., 2019). As opposed to algorithms that replace human labor, these algorithms are designed to maximize and benefit from human labor's efficiency and productivity (Fong et al., 2020).

This study has several ways in which it contributes to the literature. Firstly, it can be observed that experiential learning gradually clarifies employees' perceptions of AI in the workplace and broadens the scope of literature reviews of employees' emotional and cognitive perceptions of AI (Gillath et al., 2021; Glikson & Woolley, 2020) as a whole. Furthermore, this measure also affects employee trust in AI at work, changes employee trust during the AI adoption phase, and SDM intervention to increase employee trust in AI at work. "Certain trust" in AI at work refers to the trust that employees have in AI among themselves, especially those with high and low sensitivity. Third, by adopting "skills theory" (Zirar et al., 2023), This study uses skills theory to examine the mutually beneficial relationship between employees and AI, emphasizing the importance of upskilling and reskilling to ensure a clear understanding of necessary skills.
The study recommends that researchers focus on issues surrounding employee education and training so that they can be better able to collaborate in AI. Skill disorders are inevitable (Chuang, 2020; Rampersad, 2020), but to handle "collapse in the process of aligning oneself with the skills" (Willcocks, 2020), employees' skills must be continuously improved through retraining.

2. Methods.

This research journal employs a systematic literature review methodology to gather and analyze relevant academic papers, books, reports, and articles. A comprehensive search strategy was implemented across electronic databases, including PubMed, IEEE Xplore, Google Scholar, and Web of Science, using keywords such as "Artificial Intelligence," "collaboration," "human-AI interaction," and "workplace automation." The inclusion criteria encompassed peer-reviewed publications from diverse disciplines, focusing on AI's applications, challenges, and ethical considerations as a partner in work and action.

3. Literature Review

3.1. Evolusi Teknologi AI

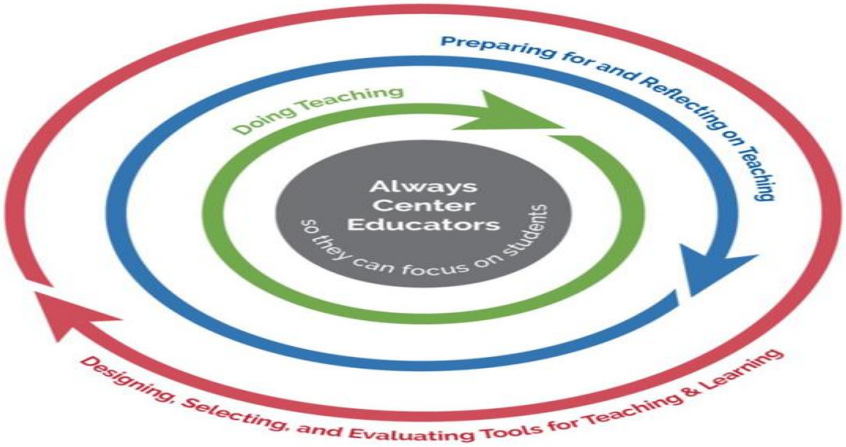
AI uses data and algorithms to perform tasks resembling human ones, and the data provided determines the performance of these intelligent systems (Farrow, 2019; Thesmar et al., 2019). AI's role in the workplace requires worker intervention to identify missing data points and classify it, as the intelligent system cannot retrieve missing data (Shute & Rahimi, 2021). To overrule or understand the output of AI systems, human interaction is also necessary (Yam et al., 2021).
In 1943, Warren McCulloch and Walter Pits proposed artificial neurons (Chandra Akshay, 2018; Great Learning Team, 2023), leading to the development of artificial neural networks (ANNs). These agents can adapt dynamically to complex problems, reproducing dynamic interactions and offering advantages over classical statistical techniques (Dr. Mandar Karhade, 2023; Ekmekci & Arda, 2020; Nakahara, 2020). Several researchers have discussed this example in depth: Grossi & Buscema (2007); and Cabreira et al. (2009).
Donald Hebb's 1949 theory, Hebbian learning, and spike-timing-dependent plasticity have significantly influenced our understanding of mirror neurons, which fire simultaneously when an individual performs an action and sees or hears another (ALGHAFRI, 2021). Alan Turing was an English mathematician who pioneered Machine learning in 1950. Alan Turing (Copeland, 2022) published "Computing Machinery and Intelligence"(Nakahara, 2020; Warwick & Shah, 2016) in which he proposed a test. The Turing test is a modified game assessing a machine's intelligence, involving a computer, a human, and a judge in isolated rooms, where the computer wins if it consistently proves humanity (Danziger, 2022).
An Allen Newell and Herbert A. Simon created the "first artificial intelligence program" Which was named "Logic Theorist" in 1955 (Ekmekci & Arda, 2020; Gugerty, 2006; SLOAT, 2023). This program proved 38 of 52 Mathematics theorems and found new and more elegant proofs for some theorems (McCorduck, 2004, p. 167). Newell and Simon explored machine learning, developing a program to prove mathematical theorems using Cliff Shaw from RAND, a renowned computer scientist, as their first project. (McCorduck, 2004, p. 169). The Journal of Symbolic Logic published a proof of a basic mathematical theorem, but its significance was deemed unimportant, despite one of its authors being a computer program (H. Wang et al., 2021).
In 1956, John McCarthy introduced the term "Artificial Intelligence" at the Dartmouth Conference, coining it as an academic field and introducing high-level computer languages like FORTRAN, LISP, and COBOL (Dr. Mandar Karhade, 2023). AI mimics human cognitive functions using speech recognition and machine vision, with weaker platforms for specific tasks and strong ones for general tasks (Anna Visvizi & Marek Bodziany, 2021).
The researchers emphasized developing algorithms that can solve mathematical problems. Joseph Weizenbaum created the first chatbot in 1966, which was named ELIZA (Ekmekci & Arda, 2020; Talha Junaid et al., 2024). In Year 1972: The first intelligent humanoid robot was built in Japan which was named WABOT-1 (Bhojwani et al., 2024; C. Laschi, P. Dario, M. Carrozza, E. Guglielmelli, G. Teti, D. Taddeucci, F. Leoni, B. Massa, M. Zecca, 2003). Humanoid robots, originating in Greek mythologies and Chinese texts, have been used in medicine, biotechnology, biomechanics, and cognitive science since the 4th century BCE. Prototypes were created in the Middle East, Italy, Japan, and France (Siciliano & Khatib, 2019).

The first artificial intelligence winter lasted from 1974 until 1980. The term "AI winter" describes the time when computer scientists struggled with a significant lack of government funding for AI research. Public interest in artificial intelligence plummeted during the AI winters.
The 1980s are regarded as the second wave of AI. Among the specialists who contributed during this time were Lotfi Zadeh, John Holland, Lawrence Fogel, Ingo Rechenberg, John Koza, and David Rumelhart (et al., 2023). The results of the most recent discoveries produced in this era are as follows: Understanding genetic algorithms, fuzzy logic, MLP, evolutionary programming, and evolutionary strategy.
The Year 1980: After AI's winter duration, AI came back with an "Expert System." Expert systems were programmed to emulate the decision-making ability of a human expert. In the year 1980, the first national conference of the American Association of Artificial Intelligence was held at Stanford University. The duration between the years 1987 and 1993 was the second AI Winter duration. Again, investors and the government stopped funding for AI research due to high costs. Year 1997: In the year 1997, IBM Deep Blue beat world chess champion Gary Kasparov and became the first computer to beat a world chess champion. Year 2002: for the first time, AI entered the home in the form of Roomba, a vacuum cleaner. The year 2006: AI came into the business world in 2006. Companies like Facebook, Twitter, and Netflix have also started using AI.
In 2011, IBM's Watson won Jeopardy, demonstrating its ability to understand natural language. In 2012, Google launched Google Now, and in 2014, Eugene Goostman won the Turing test. In 2018, IBM's Project Debater performed well in complex debates. Google demonstrated Duplex, a virtual assistant that took hairdresser appointments. Companies like Google, Facebook, IBM, and Amazon are working on AI and creating innovative devices, showcasing the future of AI with high intelligence (Russel & Norvig, 2016; Sharma & Garg, 2021).

3.2. Application of AI in Various Sectors

Many industrial sectors have explored its usefulness as operational support in various AI applications (International Electronical Commission, 2018; Kehayov et al., 2022; Lee et al., 2019; Q. Li, 2021; Pransky, 2022), including health services, for example Alowais et al. (2023) concluded that Rapid AI advancements can revolutionize healthcare by integrating it into clinical practice, Jason (2017), that there are revolutionary advances underway in the sub-field of neural networks. At the moment (Rossi, 2023), Algorithms can automate financial services in emerging markets, overcoming barriers like high costs for rural and low-income customers, guiding clinical trials, and identifying customer identities (Fernandez, 2019).
The company has improved market liquidity and wealth advisory services through high-frequency algorithmic trading, efficient price formation, AI/ML for personalized portfolios, and new return profiles (Rodríguez de las Heras Ballell, 2023). We are not left behind in the world of manufacturing (Armutak et al., 2022; Rus, 2019). AI has the potential to be very helpful in manufacturing, especially in applications such as predictive maintenance, quality assurance, and process optimization (Plathottam et al., 2023). Educators must adapt to AI's introduction in schools, educating students about its role in learning, privacy, security, and societal implications, while encouraging critical examination of potential risks (Forsyth et al., 2021; Zhang et al., 2023). AI should focus on educators (ACE) to improve learning and teaching results. ACE allows teachers to understand students more deeply and respond creatively to teachable moments. The Department confidently answered "no" to AI replacing teachers, focusing on three main loops inspired by adaptive loop research (Aleven et al., 2016). Figure 1.

Figure 1: Inspired by research on adaptive loops



Source: Cardona et al. (2023, p. 26)

We may be now living in a "peak humanity" period when the majority of us possess the greatest levels of knowledge, logic, creativity, and reasoning (Wiliam & Hattie, 2023). AI can enhance education quality, customize learning, reduce costs, offer culturally appropriate content, support decision-making, and offer

virtual instructors for special needs students (Altinay et al., 2021; Sabzalieva & Valentini, 2023; UNESCO, 2021, 2022; Wiliam & Hattie, 2023).
Various studies and case studies above are real landscapes as examples that have demonstrated how AI technology is applied to simplify processes (Bellas et al., 2023; Boucher, 2020), increase productivity (Armutak et al., 2022), and drive innovation in both the public and private sectors (Plathottam et al., 2023; Schmidt et. al, 2021).

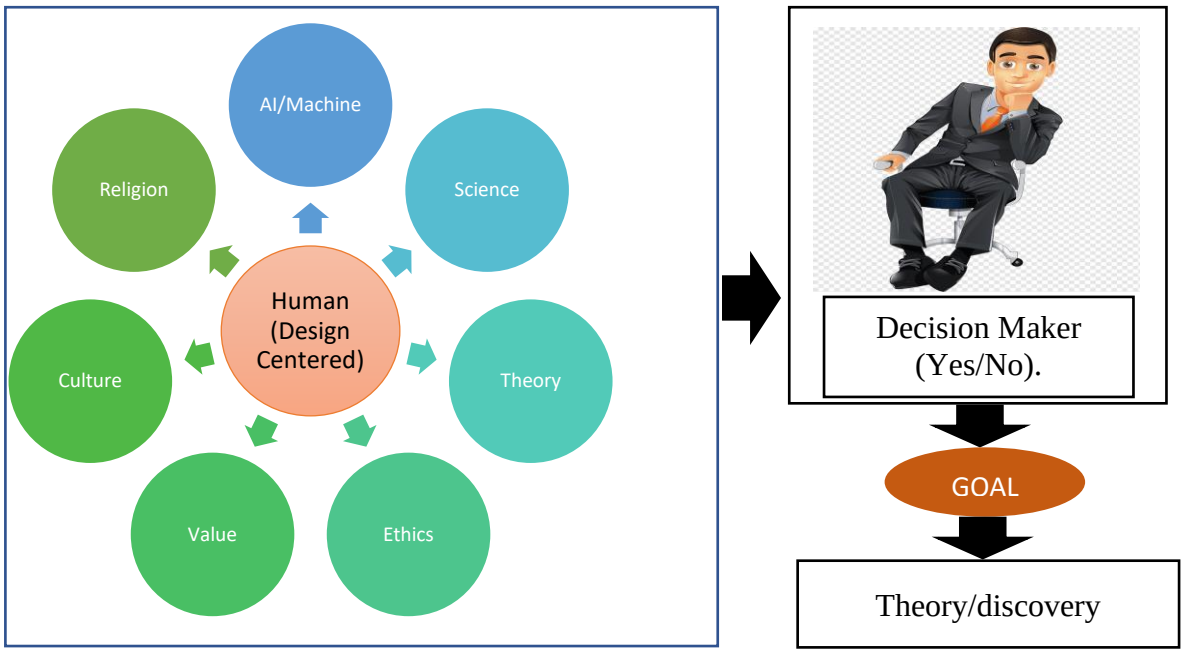
3.3. Challenges in Positioning AI as a Partner.

A machine learning algorithm predicts test scores by 60-70%, with clicker being more effective than traditional handwritten homework, online feedback being more effective, and active teamwork being more beneficial (Duzhin & Gustafsson, 2018). This is no exception to the existence of inequality in the medical world, for example, Gaczek et al. (2023) consumers are still skeptical about the ability of AI to assess their medical condition accurately. Various barriers such as value barriers, risks, traditional barriers, and image barriers (Jiang et al., 2022) need to be explored in greater depth (Mou et al., 2023). The emergence of obstacles to this emphasis places more emphasis on decision-makers. Alhosani & Alhashmi's paper (2024) highlights the potential of AI in the public sector, highlighting its benefits in reducing liability, streamlining processes, and increasing production, while acknowledging its revolutionary impact on public services (Zirar et al., 2023). The belief that AI poses a threat to jobs is the root of workers' mistrust of technology in the workplace (Zirar et al., 2023). they are required for the coexistence of labor and AI, classifying them into technical, human, and conceptual abilities.

3.4. Collaboration Opportunities

Despite the challenges, there are many opportunities to leverage AI as a collaborative partner in work and action. A worry that may be exaggerated, (Arslan et al., 2022) is that AI in the workplace threatens the survival and safety of workers' jobs. This section highlights initiatives that aim to encourage human-AI collaboration, such as explainable AI (Baker & Xiang, 2023; Edps, 2022; Freiesleben, 2022; Ignatiev, 2020), human-centered design approach (Blanes-Selva et al., 2023; Cronholm & Göbel, 2022; Jena, 2023), emerging barriers, and interdisciplinary research efforts that bridge the gap between AI developers and domain experts by bringing all results into dialogue. Humans as originators of ideas/problem ideas act as facilitators to formulate final results, each result of which has been and must be communicated from various viewpoints of science, theory, ethics, values, culture, and religion. In this way, the result is a multi-dimensional cross-justification that can be generally accepted as a friendly solution (figure 2).

Figure 2. Multidimensional Collaboration Dialog Process Circle



4. Results and Discussion

The literature review highlights the challenges of integrating AI into collaborative work environments, including ethical concerns, socio-economic implications, and job displacement. However, it also suggests promising avenues for enhancing human-AI collaboration, such as prioritizing user preferences and establishing interdisciplinary research frameworks to bridge the gap between AI developers and domain experts.

Human-computer interaction, robotics, computer science, psychology, and teamwork were all incorporated into this multidisciplinary review. Workplace AI is expected to replace low- and moderate-level knowledge-centered tasks given the future nature of the worker-AI interaction and the necessary abilities for worker-AI coexistence (Bhattacharyya & Nair, 2019). Within the next 20 years, humans' "analytical decision-making" skills will likely become less relevant as intelligent systems take over (Flaherty, 2016; Schmitt & Klotz, 2019). However, an organization's capacity to consistently use AI technologies in the workplace will determine this (Ransbotham, 2020).

One implication is that for workers to stay relevant in the workplace, they must upskill and reskill (Rampersad, 2020). This insight stems from the knowledge that workplace AI is gradually replacing long-term tasks and the skills required for them (Bhattacharyya & Nair, 2019). Businesses appear to be adopting this workplace AI strategy more and more, which makes it possible to do things like reduce the number of designated workstations (Bhattacharyya & Nair, 2019).

Yet, how employees engage with AI in the workplace in the future will continue to affect how insecure their jobs are seen and are (Nam, 2019; Richards, 2017; Shank et al., 2019; Wirtz et al., 2018). As a result, future workplace AI will continue to shift jobs and the skills needed for them to AI, disrupting job design and the competencies that employees need to possess (Bhattacharyya & Nair, 2019; Gekara & Thanh Nguyen, 2018; Nayak et al., 2019).

Nevertheless, in a workforce that is rapidly transforming due to technology, workers need to be equipped with the right training methods to help them acquire technical, interpersonal, and conceptual skills, change job positions, become adaptable, and coexist with AI systems. The anticipated future changes in jobs and their required abilities in the workplace continue to be of great interest and concern to a variety of stakeholders, including organizations, governments, HR practitioners, and workers (Nam, 2019; Richards, 2017; Wirtz et al., 2018; Xu et al., 2020).

The goal of working with humans is to increase employees' ability to relate to their human coworkers (Zirar et al., 2023). These skills include managing people, collaborating with others, sharing knowledge, emotional intelligence, cooperation, delegation, and negotiation when it comes to AI in the workplace (Lopes de Sousa Jabbour et al., 2018; Richards, 2017; Sousa & Wilks, 2018). The volume of data needed to build up AI in the workplace necessitates "honest" information exchange and cooperation among employees, making this a crucial ability for implementing AI (W. M. Wang & Cheung, 2013). The growing number of AI systems at work could potentially alter the makeup of teams (Wu et al., 2022). Future teams will include humans as well as robots or intelligent systems that act and feel like humans (Xu et al., 2020). As a collection of human agents share goals through authority delegation, teamwork may transition to a human-agent composition (Edwards et al., 2019; Richards, 2017). Nonetheless, it is proposed that this human-robot cooperation will enable employees to enhance their productivity at work (Bänziger et al., 2020). It is also capable of deciding allocation (or delegation) incrementally.

According to discussions thus far (Bhattacharyya & Nair, 2019; Gekara & Thanh Nguyen, 2018), the future of employment is uncertain. Consequently, an additional inference is that for employees to cohabit with AI in the workplace, a special symbiotic relationship necessitates investment in retraining and upskilling (Wilson & Daugherty, 2019). The experiences AI workers have at work are shaped by this equilibrium.

A symbiotic relationship between employees and AI to capitalize on each other's strengths will be developed in the workplace if this balance is "right" (Xu et al., 2020) . Instead of fear of AI in the workplace, workers will learn the sophisticated ability to take a win-sin position, a mutually complementary and mutually beneficial solution so as not to add to the ongoing discussion of the end of the job loss robot (Chuang, 2020; Sheikh et al., 2021; Willcocks, 2020)

5. Conclusion

The research journal emphasizes the transformative potential of AI as a collaborative partner in human endeavors. By understanding and addressing challenges, AI can enhance human intelligence, creativity, and decision-making. However, addressing ethical, socio-economic, and technical considerations is crucial. Interdisciplinary collaboration, stakeholder engagement, and ongoing dialogue are essential for navigating the evolving landscape of AI and positioning it as a trusted ally in shaping work and society.

6. Recommendations for Future Research

Future research should focus on interdisciplinary studies, transparent AI systems, long-term impacts on workforce dynamics, organizational culture, and societal well-being, and collaborative efforts involving academia, industry, and government to address complex challenges and co-create innovative solutions in AI and work.

Theoretical Implications:

The findings of this research journal contribute to theoretical advancements in the fields of AI, human-computer interaction, and organizational studies. By elucidating the complex interplay between technology, society, and ethics, this research deepens our understanding of the dynamics shaping human-AI collaboration and provides theoretical frameworks for guiding future research and practice.

Practice Implications:

For practitioners and policymakers, this research journal offers actionable insights for integrating AI into organizational workflows and decision-making processes. By adopting human-centered design principles, establishing ethical guidelines, and investing in workforce development initiatives, organizations can maximize the benefits of AI while mitigating potential risks and ensuring a human-centric approach to technology adoption.

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