Will Artificial Intelligence (AI) Make the School Principal Redundant? A Preliminary Discussion and Future Prospects

Article *in* Educational Process International Journal · June 2024

DOI: 10.22521/edupij.2024.132.1

1 author:

Turgut Karaköse
Kutahya DumlupInar University
83 PUBLICATIONS **2,376** CITATIONS

Ed Process Int J

www.edupij.com

Editorial

Cite this article: Karakose, T. (2024). Will Artificial Intelligence (AI) Make the School Principal Redundant? A Preliminary Discussion and Future Prospects. *Educational Process: International Journal*, 13(2): 7-14.
https://doi.org/10.22521/edupij.2024.132.1

Published Online June 11, 2024

Keywords:
School principal, school management, principal leadership, artificial intelligence, AI

Author for correspondence:
Turgut Karakose
turgut.karakose@dpu.edu.tr
Faculty of Education, Kutahya Dumlupinar University, Evliya Celebi Campus, 43100, Kutahya, Türkiye.

ISSN 2147-0901 (Print), 2564-8020 (Online)

EDUCATIONAL PROCESS
INTERNATIONAL JOURNAL

Will Artificial Intelligence (AI) Make the School Principal Redundant? A Preliminary Discussion and Future Prospects

Turgut Karakose

Abstract

Background/purpose. Developments in the world of Artificial Intelligence (AI) is full steam ahead in the wake of the fourth industrial revolution. One of the hot discussions over the exponential advancement of AI has been whether this ability of machines to accomplish tasks that require human intelligence could take over the roles of humans in the workplace and make the human workforce redundant. The field of education was no exception since AI technologies have made significant inroads into the realm of education.

Materials/methods. Although the potential of AI to replace teachers with all the seismic shift it created in the teaching-learning processes has sparked passionate debates, arguments over the potential influence of AI on school principals is scarce. This paper is an attempt to start this debate by construing how recent developments in AI-based systems could impact the process of management in schools, with its outcomes for the role and the status of the school principal.

Practical implications. We argue that, in school management, the integration of AI can facilitate the efficiency of administrative roles such as keeping/analyzing student records, decision-making, planning, budgeting, and communicating with staff or parents while at the same time improving the learning environment. When automated systems support these routine administrative duties of school principals, it will free up valuable time to handle more critical issues that require a "human touch" such as leadership. However, we signify the complementary role of humans and AI, suggesting a more symbiotic relationship in which both human and AI could bring in their own strengths and overcome their limitations.

Conclusion. We suggest that principals will not become redundant but will be even more crucial actors in the creation of human-AI symbiosis by continuously updating their AI literacy, invoking the effective integration of AI into educational and managerial processes, and guiding the other stakeholders' views and attitudes. However, principals have to realize that different times require different approaches, and their roles as school managers and leaders need to evolve in line with the changing realities of the new age of AI.

1. Introduction

Developments in the world of Artificial Intelligence (AI), which is 'the ability of machines to adapt to new situations, deal with emerging situations, solve problems, answer questions, device plans, and perform various other functions that require some level of intelligence typically evident in human beings (Coppin, 2004, p. 4), is full steam ahead in the wake of the fourth industrial revolution (Vázquez-Cano, 2021). Several innovative tools with astonishing performance are introduced one after the other; the most recent version of ChatGPT (GPT-4o), for instance, which was released just before we finalized this paper. Yet, as once iterated by the theoretical physicist Stephen Hawking, 'the rise of powerful AI will be either the best or the worst thing ever to happen to humanity. We do not yet know which'.

One of the hot discussions over the exponential advancement of AI has been whether this ability of machines to accomplish tasks that require human intelligence could take over the roles of humans in the workplace and make the human workforce redundant (Dowling & Lucey, 2023: Kanbach et al., 2024). It is even considered that AI might have the capability to 'deliver higher quality, greater efficiency, and better outcomes than human experts' (Haefner et al., 2021, p. 1) in various fields of operations. Indeed, AI has now penetrated several organizational operations that were once reserved for humans such as decision-making and management (Jarrahi, 2018; Raisch & Krakowski, 2021).

AI-enhanced smart technologies have also made significant inroads into the realm of education (İpek et al., 2023; Ramirez & Esparrell, 2024). As suggested by Chen et al. (2020), 'AI in the education sector is transitioning from simply computers to embedded systems, such as robots or colleague robots (cobots) that work with instructor or educators or independently, to perform teacher like functions' (p. 75270). Continuing this rapid integration of AI into the education sector, whether AI-based learning systems that offer customized learning opportunities and timely feedback to learners could replace teachers in the future has become a point of discussion (Louis & ElAzab, 2023; Orhani, 2023). In addition to instruction, teaching and learning, recent developments in AI have also opened potential avenues for the management of education (Chassignol et al., 2018), sparking a debate over its emerging influence on educational management and leadership. Van Quaquebeke and Gerpott (2023) have recently stressed that 'the question is not anymore whether AI will play a role in leadership, the question is whether we will still play a role. And if so, what role that might be. It is high time to start that debate' (p. 272).

The purpose of this paper is to extend this iteration by Van Quaquebeke and Gerpott (2023) through evaluating the potential of recent intelligent systems such as learning analytics, automated administration, chatbots, and robots to challenge and enhance the role and the status of the school principal. Although the potential of AI to replace teachers with all the seismic shift it created in the teaching-learning processes has sparked passionate debates, arguments over the potential influence of AI on school principals have remained scarce (Hejres, 2022). This paper is an attempt to start this debate by construing how recent developments in AI-based systems could impact the process of management in schools, with its outcomes for the role and the status of the school principal.

2. Literature Review

2.1. The Process of School Management in the Wake of AI-based Systems

As a subfield of public administration, the educational administration and management field has borrowed several themes and theories from public administration theorists to explain the roles and operations of school principals. One of these was Gulick and Urwick's' (1937) framework of the functions of management, which they listed as 'planning, organizing, staffing, direction, coordinating, reporting, and budgeting' (the popular acronym POSDCORB) (Nhema, 2015). With the

https://doi.org/10.22521/edupij.2024.132.1 Published online by Universitepark Press

changing realities of the 21st century, in addition to these managerial roles, which were already overwhelming for the principal to realize individually, the leadership role has also become the focus of attention (Hallinger, 2003).

Considering the managerial roles mentioned above, recent developments such as machine learning, big data analysis, data mining, and learning analytics have much to offer to ease principals' administrative and managerial burdens (Fullan et al., 2023; Umkabu, 2023). For instance, developments in big data enable the processing of diverse and large sets of data that cannot be processed by human effort and intelligence alone (Berkat et al., 2024). Through gathering, analyzing, and assessing large datasets, AI-based big data analysis can extract 'actionable knowledge and viable patterns from data' by employing 'a variety of technologies and tools, such as statistical analysis, data mining, data visualization, text analytics, social network analysis, signal processing, and machine learning' (Luan et al., 2020, p. 2). In the same vein, machine learning algorithms can yield reliable results, predictions and solutions that can facilitate quality decision-making, and support the process of planning, organizing, direction, reporting and budgeting (Berkat et al., 2024; Gobert et al., 2013).

By utilizing these innovative technologies such as data mining, machine learning, GenAI, and learner analytics, principals can identify patterns, trends, relationships and anomalies in data on students, teachers, curriculum, and assessment (Zhang, 2024) more accurately and quickly (Liu & Jian, 2024), which help them 'make appropriate and strategic decisions in improving the quality of education' (Berkat et al., 2024, p. 1895). As suggested by Chen et al. (2020), principals can use these results to offer recommendations for students selecting classes or universities, to follow students' aspirations, preferences, and needs of learning, and tailor curriculum and instruction to their specific needs and abilities, to create early-warning systems to intervene with students at risk of drop-out.

These advanced technologies have obviously much to offer to support the managerial roles of the school principals, which are accomplished by more technical and mechanical means. As for the leadership roles, though, the current state-of-the-art in AI seems to remain insufficient as leadership requires more sentimental qualities such as social intelligence, genuine emotional connections, and intuition in addition to cognitive abilities (Fullan et al., 2023; Leithwood, 2023). This brings us to the automation-augmentation dichotomy in adopting AI systems into the management of organizations (Keding, 2021).

2.2. Automation vs. Augmentation: A Dichotomy or a Symbiosis

Automation refers to machines fully taking over a human task while augmentation implies a close collaboration between humans and machines to perform a particular task (Raisch & Krakowski, 2021). This suggests that there is no human involvement in automated decision-making making although the outcomes from this process can guide managers to act accordingly (Newell and Marabelli 2015). In addition, automation is considered to save managers time and energy from administrative issues, which they can spare for better leadership and creativity (Daugherty & Wilson, 2018; Haefner et al., 2021).

Scholars now accentuate the complementary role of humans and AI, suggesting a more symbiotic relationship in which both human and AI could bring in their own strengths and overcome their limitations (Kasneci et al., 2023; Sallam, 2023; Papadakis et al., 2024; Tülübaş et al., 2023). Raisch and Krakowski (2021) underline that 'the human-machine relationship is no longer dichotomous, but evolving into a machine "augmentation" of human capabilities … [which can] "rehumanize work" by gradually shifting the focus from repetitive and monotonous tasks to more creative and fulfilling tasks' (p. 6). Similarly, Jarrahi (2018) suggests that in a human-AI partnership, AI could work with complex and mechanical issues using their analytical strength while humans

https://doi.org/10.22521/edupij.2024.132.1 Published online by Universitepark Press

focus on the more uncertain and equivocal aspects of managerial decision-making. More specifically, Jarrahi (2018) proposes that 'machines should take care of mundane tasks, allowing humans to focus on more creative work' (p. 10). Araujo et al. (2020), on the other hand, the socio-technical aspect of decision-making, and suggest that automated decision-making algorithms 'do not function in isolation but are embedded in the context of particular societal, institutional, or organizational structures, with their own mechanisms, incentives, (power) relationships, and roles in society' (p. 612). Săvoiu (2023) adds to these discussions by focusing on innovations in human brain-computer interfaces called 'the digital bridge' that potentially offer greater levels of AI-human connection in a range of applications, including organizational decision-making.

In the field of school management, the integration of AI is likely to facilitate the efficiency of administrative roles such as keeping/analyzing student records, decision-making, planning, budgeting, and communicating with staff or parents while at the same time improving the learning environment. As suggested by Al-Omari (2024), when automated systems support the routine administrative duties of school principals, it is likely to free up valuable time to handle more critical issues that require a "human touch".

Indeed, most issues inherent to school management are too complex to be fully accomplished by automated systems and require principals' involvement and collaboration with machines before reaching a final decision (Holzinger, 2016). School principals often need to make strategic decisions in a more ambiguous and equivocal environment, mostly using subjective judgment based on past experience, intuition, and holistic insights (Davenport, 2018). What's more, these strategic decisions require a more integrated perspective (Jarrahi, 2018) and thus the collaborated efforts of the educational stakeholders become significant in producing high-quality outcomes (Harris, 2006 REF). As eloquently expressed by Leaton Gray (2020), data patterns identified by automated systems

> may be a subsequence rather than a consequence of human action, as with any statistical analysis. For example, a cluster of students experiencing lower attainment one year may be a coincidence (to do with local weather conditions, or an epidemic of some kind, for example) and have little to do with any school-related provision. This may generate false positives for a school inspection service, triggering inspections where they are not needed (p. 167).

This argument by Leaton Gray also finds support from the organizational management field, indicating that the intuitive and common-sense judgment of managers is necessary to reconcile the machine output with reality before making a final decision about the best option (Raisch & Krakowski, 2021). In addition, managers need advanced leadership skills to maintain trust-based genuine relationships in the workplace, to match the skills and expertise of the staff with the organizational tasks, and to ensure that organizational decisions are internalized by the staff (Davenport & Kirby, 2016; Karakose et al., 2024a; Karakose & Tülübaş, 2024c). All these apply even more significantly to the case of the school principal, who needs to ensure democracy, justice, trust, accountability, and responsible act (Leaton Gray, 2020). Indeed, making decisions and setting objectives 'is closely related to taking responsibility for the associated tasks and outcomes … [and] humans can only take responsibility if they retain some level of involvement with and control over the relevant tasks (Raisch & Krakowski, 2021, p. 15).

3. Conclusion and Future Prospects

Nearly half a century ago, Heller (1985, p. 43) stated that albeit slowly, technology was taking its place in education, with a promising contribution to the improvement of learning, but by any means, principals were nonreplaceable because the human element was crucial for leadership. Since then, unprecedented advancements have been made in the world of digital technologies including AI-based systems but we still believe that AI making school principals redundant is still

https://doi.org/10.22521/edupij.2024.132.1 Published online by Universitepark Press

'much ado about nothing', or another overhyped preposition (Jarrahi, 2018). In fact, recent developments in AI have created a co-evolutionary process of augmented intelligence in which both humans and machines learn from each other and mutually compensate for their weaknesses and inadequacies (Rahwan et al., 2019).

As such, we support Jarrahi's (2018, p. 11) claim that 'it is more meaningful to view AI as a tool for "augmentation" (extending human's capabilities) rather than "automation" (replacing them)', and argue that AI will not replace school principals but augment their potential to tackle with administrative issues so that they can engage in improved leadership practice and provide the 'human touch' that will always be necessary in the world of humans as social beings (Karakose et al., 2024b). We believe this perspective can be 'a more effective guide for the future rather than a preoccupation with superintelligent machines that can replicate every aspect of human intelligence, and eventually replace them in the workplace' (Jarrahi, 2018, p. 11).

Accordingly, we suggest that principals will not become redundant but will be even more crucial actors in the creation of human-AI symbiosis by continuously updating their AI literacy, invoking the effective integration of AI into educational and managerial processes, and guiding the other stakeholders' views and attitudes (Tyson & Sauers, 2021) so that schools can provide students with a learning experience enriched and updated by AI. On the other hand, principals have to realize that different times require different approaches, and their roles as school managers and leaders need to evolve in line with the changing realities of the new age of AI (Harris et al., 2023; Huang et al., 2019; Karakose et al., 2023; Nhema, 2015). In summary, AI technology 'can help in many ways - some proven, some potential- but schools are for people. The better the people, however defined, the better the school. There is no substitute for the skillful principal who can manage and can lead a staff' (Heller, 1985, p. 46)

Declarations

Author Contributions. The article was written by a single author, who read and approved the final published version of the article.
Conflicts of Interest. The author declared no potential conflicts of interest.
Funding. The author received no financial support for this article.

References

Al-Omari, A. (2024). The impact of artificial intelligence on the school management: a study of opportunities and challenges in Jordan. *INTED2024 Proceedings*, 5478-5486. https://doi.org/10.21125/inted.2024.1418

Araujo, T., Helberger, N., Kruikemeier, S., & De Vreese, C. H. (2020). In AI we trust? Perceptions about automated decision-making by artificial intelligence. *AI & Society, 35*, 611-623. https://doi.org/10.1007/s00146-019-00931-w

Berkat, B., Alexandro, R., & Basrowi, B. (2024). Utilization of big data and artificial intelligence on quality education management and its implications on school sustainability. International *Journal of Data and Network Science, 8*(3), 1895-1906. https://doi.org/10.5267/j.ijdns.2024.1.023

Chassignol, M., Khoroshavin, A., Klimova, A., & Bilyatdinova, A. (2018). Artificial Intelligence trends in education: a narrative overview. *Procedia Computer Science, 136*, 16-24. https://doi.org/10.1016/j.procs.2018.08.233

Chen, L., Chen, P., & Lin, Z. (2020). Artificial intelligence in education: A review. *Ieee Access, 8,* 75264-75278. https://doi.org/10.1109/ACCESS.2020.2988510

Coppin, B. (2004). *Artificial intelligence illuminated*. Jones and Bartlett.

Davenport, T. H. (2018). Rise of the strategy machines. In *What the digital future holds:20 groundbreaking essays on how technology is reshaping the practice of management* (pp. 68-89]. The MIT Press. https://doi.org/10.7551/mitpress/11645.001.0001

Dowling, M., & Lucey, B. (2023). ChatGPT for (finance) research: The Bananarama conjecture. *Finance Research Letters, 53*, 103662. https://doi.org/10.1016/j.frl.2023.103662

Fullan, M., Azorín, C., Harris, A., & Jones, M. (2023). Artificial intelligence and school leadership: challenges, opportunities and implications. *School Leadership & Management*, 1-8. https://doi.org/10.1080/13632434.2023.2246856

Gobert, J. D., Sao Pedro, M., Raziuddin, J., & Baker, R. S. (2013). From log files to assessment metrics: Measuring students' science inquiry skills using educational data mining. *Journal of the Learning Sciences, 22*(4), 521-563. https://doi.org/10.1080/10508406.2013.837391

Gulick, L. & Urwick, L. (1937). *Papers on the science of administration*. Institute of Public Administration

Haefner, N., Wincent, J., Parida, V., & Gassmann, O. (2021). Artificial intelligence and innovation management: A review, framework, and research agenda. *Technological Forecasting and Social Change, 162*, 1-10. https://doi.org/10.1016/j.techfore.2020.120392

Hallinger, P. (2003). Leading educational change: Reflections on the practice of instructional and transformational leadership. *Cambridge Journal of Education, 33*(3), 329-352. https://doi.org/10.1080/0305764032000122005

Harris, A., Azorín, C., & Jones, M. (2023). Network leadership: a new educational imperative?. *International Journal of Leadership in Education, 26*(5), 919-935. https://doi.org/10.1080/13603124.2021.1919320

Heller, M. (1985). Principals in high tech age are the non-replaceable leaders. *NASSP Bulletin, 69*(484), 43-46. https://doi.org/10.1177/019263658506948412

Hejres, S. (2022). The impact of artificial intelligence on instructional leadership. In *Technologies, Artificial Intelligence and the Future of Learning Post-COVID-19: The Crucial Role of International Accreditation* (pp. 697-711). Springer International Publishing.

Holzinger, A. (2016). Interactive machine learning for health informatics: when do we need the human-in-the-loop?. *Brain Informatics, 3*(2), 119-131. https://doi.org/10.1007/s40708-016-0042-6

Huang, M. H., Rust, R., & Maksimovic, V. (2019). The feeling economy: Managing in the next generation of artificial intelligence (AI). *California Management Review, 61*(4), 43-65. https://doi.org/10.1177/0008125619863436

İpek, Z. H., Gözüm, A. I. C., Papadakis, S., & Kallogiannakis, M. (2023). Educational Applications of the ChatGPT AI System: A Systematic Review Research. *Educational Process International Journal, 12*(3), 26-55. https://doi.org/10.22521/edupij.2023.123.2

Jarrahi, M. H. (2018). Artificial intelligence and the future of work: Human-AI symbiosis in organizational decision making. *Business Horizons, 61*(4), 577-586. https://doi.org/10.1016/j.bushor.2018.03.007

Kanbach, D. K., Heiduk, L., Blueher, G., Schreiter, M., & Lahmann, A. (2024). The GenAI is out of the bottle: generative artificial intelligence from a business model innovation perspective. *Review of Managerial Science, 18*(4), 1189-1220. https://doi.org/10.1007/s11846-023-00696-z

Karakose, T., Demirkol, M., Yirci, R., Polat, H., Ozdemir, T. Y., & Tülübaş, T. (2023). A conversation with ChatGPT about digital leadership and technology integration: Comparative analysis based on human–AI collaboration. *Administrative Sciences, 13*(7), 157-176. https://doi.org/10.3390/admsci13070157

Karakose, T., Kardas, A., Kanadlı, S., Tülübaş, T., & Yildirim, B. (2024a). How collective efficacy mediates the association between principal instructional leadership and teacher self-efficacy: findings from a meta-analytic structural equation modeling (MASEM) study. *Behavioral Sciences, 14*(2), 85-112. https://doi.org/10.3390/bs14020085

Karakose, T., Leithwood, K., & Tülübaş, T. (2024b). The intellectual evolution of educational leadership research: a combined bibliometric and thematic analysis using SciMAT. *Education Sciences, 14*(4), 429-461. https://doi.org/10.3390/educsci14040429

Karakose, T., & Tülübaş, T. (2024c). School Leadership and Management in the Age of Artificial Intelligence (AI): Recent Developments and Future Prospects. Educational Process: International Journal, 13(1): 7-14. https://doi.org/10.22521/edupij.2024.131.1

Kasneci, E., Seßler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., ... and Kasneci, G. (2023). ChatGPT for good? On opportunities and challenges of large language models for education. *Learning and Individual Differences, 103*, 102274. https://doi.org/10.1016/j.lindif.2023.102274

Keding, C. (2021). Understanding the interplay of artificial intelligence and strategic management: four decades of research in review. *Management Review Quarterly, 71*(1), 91-134. https://doi.org/10.1007/s11301-020-00181-x

Leaton Gray, S. (2020). Artificial intelligence in schools: Towards a democratic future. *London Review of Education, 18* (2), 163–177. https://doi.org/10.14324/LRE.18.2.02

Leithwood, K. (2023). The personal resources of successful leaders: A narrative review. *Education Sciences, 13*(9), 932-945. https://doi.org/10.3390/educsci13090932

Liu, H., & Jian, H. (2024). Teaching reform and innovation of vocational development and employment guidance courses in colleges and universities based on random forest model. *Applied Mathematics and Nonlinear Sciences, 3*(2), 1–17. https://doi.org/https://doi.org/10.2478/amns.2023.2.00229

Louis, M., & ElAzab, M. (2023). Will AI replace teacher?. *International Journal of Internet Education, 22*(2), 9-21. https://doi.org/10.21608/IJIE.2023.312491

Luan, H., Geczy, P., Lai, H., Gobert, J., Yang, S. J., Ogata, H., ... & Tsai, C. C. (2020). Challenges and future directions of big data and artificial intelligence in education. *Frontiers in Psychology, 11*, 580820. https://doi.org/10.3389/fpsyg.2020.580820

Newell, S., & Marabelli, M. (2015). Strategic opportunities (and challenges) of algorithmic decision-making: A call for action on the long-term societal effects of 'datification'. *The Journal of Strategic Information Systems, 24*(1), 3-14. https://doi.org/10.1016/j.jsis.2015.02.001

Nhema, A. G. (2015). Relevance of classical management theories to modern public administration: A review. *Journal of Public Administration and Governance, 5*(3), 165-179. http://doi.org/10.5296/jpag.v5i3.8337

Orhani, S. (2023). Robots assist or replace teachers in the classroom. *Journal of Elementary and Secondary School, 1*(1), 29-41. https://doi.org/10.31098/jess.v1i1.1418

Papadakis, S., Gözüm, A.İ.C., Kaya, Ü.Ü., Kalogiannakis, M., & Karaköse, T. (2024). Examining the Validity and Reliability of the Teacher Self-Efficacy Scale in the Use of ICT at Home for Preschool Distance Education (TSES-ICT-PDE) Among Greek Preschool Teachers: A Comparative Study with Turkey. In: Papadakis, S. (eds) IoT, AI, and ICT for Educational Applications. EAI/Springer Innovations in Communication and Computing. Springer, Cham. https://doi.org/10.1007/978-3-031-50139-5_1

Rahwan, I., Cebrian, M., Obradovich, N., Bongard, J., Bonnefon, J. F., Breazeal, C., ... & Wellman, M. (2019). Machine behaviour. *Nature, 568*(7753), 477-486. https://doi.org/10.1038/s41586-019-1138-y

Raisch, S., & Krakowski, S. (2021). Artificial intelligence and management: The automation–augmentation paradox. *Academy of Management Review, 46*(1), 192-210. https://doi.org/10.5465/amr.2018.0072

Ramirez, E. A. B., & Esparrell, J. A. F. (2024). Artificial Intelligence (AI) in education: unlocking the perfect synergy for learning. *Educational Process International Journal, 13*(1), 35-51. https://doi.org/10.22521/edupij.2024.131.3

Sallam, M. (2023). ChatGPT utility in healthcare education, research, and practice: Systematic review on the promising perspectives and valid concerns. *Healthcare*, 11(6), 887-905. https://doi.org/10.3390/healthcare11060887

Săvoiu, G. (2023). Could artificial intelligence (ai) be a real threat to humanity or everything is just "much ado about nothing"? Does ai become an existential risk or opportunity for scientific knowledge and research?. *Econophysics, Sociophysics & Other Multidisciplinary Sciences Journal (ESMSJ), 12*(1), 3-20.

Tülübaş, T., Demirkol, M., Ozdemir, T. Y., Polat, H., Karakose, T., & Yirci, R. (2023). An interview with ChatGPT on emergency remote teaching: A comparative analysis based on human–AI collaboration. *Educational Process International Journal, 12*(2), 93-110. https://doi.org/10.22521/edupij.2023.122.6

Tyson, M. M., & Sauers, N. J. (2021). School leaders' adoption and implementation of artificial intelligence. *Journal of Educational Administration, 59*(3), 271-285. https://doi.org/10.1108/JEA-10-2020-0221

Umkabu, T. (2023). The impact of supervisory management and service-learning pedagogy on the development strategy of junior high schools. *Journal of Pedagogical Research, 7*(5), 223–236. https://doi.org/10.33902/jpr.202323857

Van Quaquebeke, N., & Gerpott, F. H. (2023). The now, new, and next of digital leadership: How Artificial Intelligence (AI) will take over and change leadership as we know it. *Journal of Leadership & Organizational Studies, 30*(3), 265-275. https://doi.org/10.1177/15480518231181731

Vázquez-Cano, E. (2021). Artificial intelligence and education: A pedagogical challenge for the 21st century. *Educational Process International Journal*, *10*(3), 7-12. https://dx.doi.org/10.22521/edupij.2021.103.1

Zhang, Z. (2024). Innovative teaching strategies for aesthetic arts in higher education institutions based on big data technology. *Applied Mathematics and Nonlinear Sciences, 9*(1), 1–17. https://doi.org/10.2478/amns.2023.2.00170

About the Contributor

Turgut Karakose is a Professor and Head of the Department of Educational Sciences at Dumlupınar University, Kütahya, Türkiye. His main research interests include educational leadership and management, higher education, psychology, and human behavior. He has published extensively in leading international journals and also authored books and chapters on education/management.
E-mail: turgut.karakose@dpu.edu.tr
ORCID ID: https://orcid.org/0000-0003-0346-8154