Doing Educational Leadership in the AI Age: Redefining the Roles and Responsibilities of System Level Leaders

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Abstract

Technological advances have the potential to significantly impact various aspects of human life, including the educational sphere. It seems likely that the education of the future will be influenced by the advent of AI, and this will undoubtedly require a shift in thinking and action that is markedly distinct from past. In light of these developments, it would be beneficial for those in leadership positions within the education system, at all levels, including local and national education authorities, to undertake a thorough reassessment of their roles and responsibilities with regards to the planning, implementation and evaluation of AI and its integration in the education system. The aim of this study is therefore to explore the effective use of artificial intelligence in the management of educational organizations and also to discuss the new roles and responsibilities of system level educational leaders.

Key Words: Educational leadership, AI, AI-human collaboration

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Introduction

In the modern era, characterised by relentless and exponential change, advances in technology have a profound impact on all aspects of human life. The latest technological developments have reached a point where it is now feasible to undertake a multitude of sophisticated operations with a high level of precision and expertise through the utilisation of artificial intelligence (AI) tools in the fields where we lack the requisite knowledge and abilities. As an illustration, we can use AI to plan a travel schedule in the style of an experienced tourist guide, write academic articles with the expertise of a scientist working in a field for years, and translate documents and/or reports in an unfamiliar language in seconds. Besides as these applications are relatively user friendly and inexpensive. Therefore, AI has become a near-ubiquitous feature of daily life for some people.

While it may not always be apparent, these technological developments exert a substantial influence on educational institutions and its stakeholders. For instance, a student who has the requisite competence in AI is able to prepare a graduation thesis in a relatively short period of time without expending significant effort. The primary issue is the lack of awareness among those responsible for preparing or evaluating theses regarding the potential of AI to utilise inaccurate, fictitious or fabricated information. Furthermore, both regulatory frameworks and detection software for unethical AI use are ill-equipped to address this concern. On the contrary, AI-based applications have been adopted rapidly across both social and educational contexts, with usage rates providing clear evidence of increase of AI prevalence. Therefore, people engaged in the educational process – including students, teachers and educational leaders – must develop the skills and knowledge needed to utilise AI effectively and ethically in educational context.

It seems appropriate to introduce a new argument here, focusing on the role of leaders in influencing, guiding and modelling the society. In consideration of the aforementioned explanations, the education of the future, which will undoubtedly be influenced by the advent of AI, will necessitate a shift in thinking and action that is

markedly distinct from previous. Therefore, it is crucial for leaders at all levels in the education system, including local educational authorities and those at provincial and national levels, to conduct a thorough reassessment of their duties and roles.

Technology, AI & Changing Landscape of Educational Leadership

As of November 17, 2019, the effects of the outbreak in Wuhan province of China were the subject of discussion in many countries around the world. This was subsequently followed by the declaration of a global pandemic by the World Health Organisation (WHO) on 11 March 2020. The ongoing pandemic has presented a multitude of novel concepts and practices that have had a significant impact on our social interactions. These include the concept of the 'new normal', the introduction of travel restrictions, the obligation to wear masks in public, the rollout and uptake of vaccines, business closures, mass deaths resulting from the virus, and so on. The ongoing pandemic has also had vital impacts on all kind of educational institutions, leading school closures in 188 nations and therefore affecting the education of more than 1.7 billion children and their families (Gouëdard et. al., 2020). The pandemic circumstances have compelled many educational organizations into a rapid and largely unorganized emergency remote teaching format (Oliveira et. al., 2021) ranging from kindergarten to universities. In this process, some teachers who were initially reluctant to use technology in education due to limited technological knowledge and competence were eventually encouraged to embrace technology-enhanced teaching and learning, even though they initially had reservations. Besides, some parents who had previously limited their children's use of mobile phones and tablets found themselves having to relax these restrictions so that their children would be able to follow their lessons and complete their homework.

The use of technology in education was a long-standing phenomenon. However, the advent of the pandemic and the concomitant shift towards distance learning, coupled with the increased exposure of educational stakeholders (students, teachers, parents etc.) across all age groups to digital tools for extended periods represented a significant turning point in education. Along with the recent technological developments, we have also witnessed the emergence of a number of new techniques and ideas, including big data, algorithms, data mining, analytical tools, machine learning, and AI (Williamson, 2017). Actually, AI is an umbrella term that encompasses a wide range of methods, including expert systems, machine learning, neural networks, and deep learning (Dai et. al., 2024).

AI is a field of study that aims to develop systems capable of handling tasks requiring human-like cognitive abilities. This involves creating sophisticated computational techniques and algorithms that can help machines to accurately understand given data, absorb new information from it, and use that knowledge to achieve specific goals while adapting to new situations (Aldighrir, 2024). In order to produce accurate results, AI often requires a significant amount of data, as the data helps to train the algorithms to identify patterns by providing them with a substantial number of examples (Wang, 2021). The autonomous learning capability of AI, along with its dependence on big data, has the potential to transform it into a technology that could have implications for society and politics (Williamson, 2023). It is therefore understandable that while some social groups are using and supporting AI tools, others may view it as a technology that is not yet fully understood and therefore requires a certain degree of caution.

The concept of artificial intelligence (AI) is not a new phenomenon. However, its recent emergence within the educational sphere has been marked by the advent of generative AI technologies such as ChatGPT (Fullan, 2024), which has the potential to bring about significant changes in the way we approach education. It is now possible for students to produce academic papers in a relatively short time that are of a very high standard and are difficult to distinguish from those written by human beings (Shah, 2023). One study on AI tutoring in China showed that compared to human teachers, the AI tutors were more successful in preparing students for college entrance exams (as cited in Tyson & Sauers, 2021). It may be anticipated that by 2030, AI may potentially automate approximately 40% of the tasks that elementary school teachers currently perform, particularly non-instructional tasks such as tracking student progress. (Herold, 2019). In sum a burgeoning interest in investigating the potential of artificial intelligence (AI) in the classroom can be observed, driven by both vendors promoting their AI products and educational leaders seeking to exemplify their dedication to innovation and leadership (Horn, 2024).

The development of AI is progressing at a rapid pace, necessitating a commitment from individuals and institutions to keep pace with this evolution. Adapting to this change is a multifaceted process that extends beyond the mere utilization of AI. Furthermore, it is crucial to gain insight into the impact of AI on our personal and professional lives and on leadership practices (Donasco & Oliveros, 2024). AI's powerful processing performance brings significant impacts on governance and data exploration (Tyson & Sauers, 2021). Despite limited use of AI in education administration, AI-powered tools are being integrated into leaders' daily roles, often unknowingly (Dai et. al., 2024).

What Does Artificial Intelligence Promise to System Level Educational Leaders?

It is asserted that the use of artificial intelligence has the capacity to optimize the effectiveness and efficiency of educational leaders operating at local and national levels within the scope of their respective roles. Notwithstanding the difficulties inherent in providing a comprehensive taxonomy of these contributions, the author of the present study suggests that six main domains (See Figure 1) in which artificial intelligence can be beneficial are worthy of consideration.

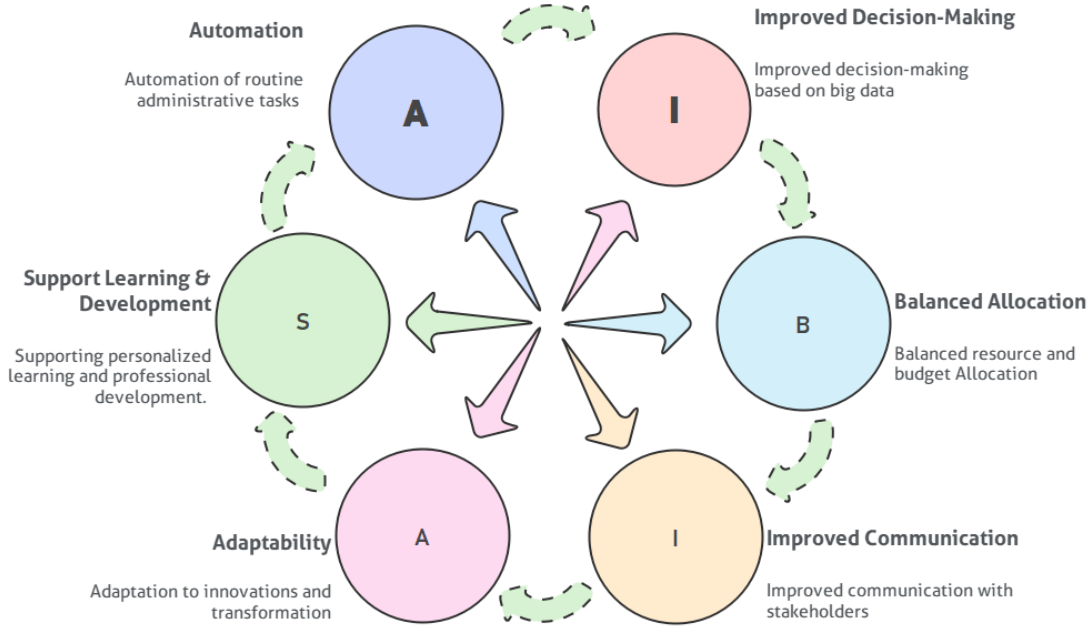

Figure 1. Domains of AI's Contribution to Educational Leaders

Automation of routine administrative tasks:

By automating routine administrative tasks, AI reduces teachers' workload, enabling them to concentrate more on teaching and mentoring students (Molina et. al., 2024). As is the case with teachers, educational leaders are also able to allocate more time and attention to complex and strategic tasks by automating routine tasks with generative AI. National educational leaders as well as local educational authorities, are now equipped with the capability to use AI-driven tools for tasks such as meeting scheduling, project and calendar management, monitoring school, student and staff records, and conducting official correspondence. The potential of AI to streamline routine administrative tasks, including planning, reviewing, monitoring, and record-keeping, is a key benefit, allowing leaders to focus on more urgent and important matters. Besides staff members responsible for tracking these routine tasks (i.e. executive assistants) can be assigned to perform other tasks, thus ensuring optimum employment of staff.

Improve decision-making with data-driven information:

Traditionally, the field of educational leadership has been predominantly associated with decision-making processes and administrative procedures shaped by human agency. Whilst human expertise remains a prerequisite, artificial intelligence (AI) has the potential to enhance these processes, rendering them more efficient, precise and data-driven. The capacity of artificial intelligence (AI) to facilitate decision-making processes in leadership roles is a subject that has been the focus of considerable attention. Specifically, an AI capable of using big data can offer substantial guidance to educational leaders by presenting them with alternative options and facilitating the comparison of these options based on the available data. It may be the case that a bureaucrat working in the Ministry of National Education could potentially find him/her in a position where he/she could use the available data to influence decisions about teachers, students or schools.

The employment of AI enables the modelling of alternative decisions that can be implemented using the provided data, in addition to some simulations of potential outcomes over the education system. Therefore, it can be asserted that educational leaders can collaborate with AI, acting in a mentorship capacity and providing advisory support within decision-making processes. Donasco and Oliveros (2024) posited that the utilization of AI by educational leaders in decision-making processes is analogous to a team operating in synergy. In this metaphorical team, while AI assumes responsibility for the mechanical aspects of analysis, such as the processing of data, educational leaders contribute a human element by ensuring that the decisions made are ethically aligned with established values. The integration of AI within the decision-making processes of educational leaders has been shown to enhance their decision-making competencies. The integration of AI tools and methods, such as data-driven decision making and simulation, has been identified as a key factor in the development of these skills among educational leaders (Abduljaber, 2024).

Balanced Resource and Budget Allocation:

The process of determining how expenditure is allocated and how resources are distributed among organizational units can be regarded as a pivotal organizational procedure. This procedure is closely associated with pivotal decisions regarding strategic objectives and resource acquisition strategies (Lepori et. al., 2013). Some of artificial intelligence tools has the potential to enhance the optimization of resource allocation through the analysis of data pertaining to staffing requirements, facility use, and equipment inventory. This can result in enhanced efficiency in the utilization of resources and potential cost savings. The effective and balanced allocation of personnel, resources and budgets according to big data and needs has the potential to contribute to the elimination of inequalities at regional and local levels. To illustrate, the use of Artificial Intelligence tools facilitates the reallocation of surplus equipment, such as a microscope, from a school in the city centre to a school in a rural village. Algorithms can also be employed to ensure the equitable distribution of school personnel and budgets.

Improved Communication with Stakeholders:

Successful leadership is predicated on the maintenance of open lines of communication with employees, stakeholders, and customers. However, it is a formidable task to maintain effective and open communication with all stakeholders while preserving management processes within the organization. Artificial intelligence can make a substantial contribution to leaders who wish to solicit stakeholders' opinions and suggestions regarding the organization and management processes. The integration of AI into leadership practices has been demonstrated to facilitate enhanced communication and collaboration (Madanchian et. al., 224). Chatbots, powered by AI, are transforming how the public interacts with organizations in the digital age. These conversational AI tools are poised to revolutionize communication channels (Zhou et. al., 2023). Chatbots and virtual assistants have the capacity to address routine inquiries, furnish information, and redirect individuals to relevant resources. Such developments can enhance communication efficacy and accessibility, allowing administrators more time to engage in more complex communications.

Adaptation to Innovations and Transformation:

In the contemporary business landscape, there is a notable paradigm shift being driven by the integration of artificial intelligence (AI) into operational processes. AI-related technologies, including machine learning, natural language processing, and robotics have emerged as significant drivers of innovation within organizations. This innovation has precipitated the creation of revolutionary products, services, and business methods (Najana et. al., 2024).

In a highly centralized organization such as the Ministry of National Education, the use of AI-based applications in provincial organizations for planning, decision-making, budgeting, and resource allocation can make a significant contribution to both decision-making mechanisms more effective and eliminating inequalities among schools. By using these tools, innovations and changes in education management can be tracked. The level of organizational cohesion in terms of policy and practice can be increased through simulations. In this context, it appears more rational for the Ministry to maintain a pace with technological innovations and to adopt a paradigm that permits such innovations and alterations in structure and functioning.

Supporting Personalized Learning and Professional Development:

The effectiveness of AI tools in generating dynamic and engaging learning settings, adapting to individual student needs, and delivering real-time feedback has been demonstrated (Amado et. al., 2024). By knowing how each student learns best, what their strengths and weaknesses are, and their background, schools can create customized learning plans, use resources wisely, and give students helpful feedback to help them improve (Meng & Sermsri, 2024). And this is not just true for the learning of students. Education leaders can also use their own big data stacks to provide individualized professional development opportunities for their teachers. By combining the opinions and observations of educational supervisors, questionnaires administered to teachers, and the opinions of school administrators regarding the strengths and weaknesses of individual teachers, more holistic and realistic alternatives for teacher professional development can be created.

Conclusion

Educational administrators can use AI applications to facilitate many tasks, such as resource allocation, data-driven decision making, and task monitoring. Artificial intelligence (AI) has the capacity to facilitate the analysis of vast quantities of data by administrative bodies, including student and teacher performance data, attendance records and resource allocation. AI-powered systems have been developed to identify patterns, trends and insights that inform decision-making processes. This information can subsequently inform the formulation of data-driven strategies with the objective of improving school outcomes and the effective allocation of resources. AI can make significant contributions for both central and local educational administrators while planning professional development activities for teachers and communicating with different stakeholders.

Besides school safety and security measures can be enhanced by artificial intelligence. Facial recognition systems and video analytics can help monitor school buildings, detect potential security threats, and ensure the safety of students and staff. AI-powered systems can also analyse school stakeholders' views (social media accounts, survey results etc.) to identify and proactively address potential conflicts. AI can also be used to guide decisions about how to address regional and local inequalities in education. In addition, AI can act as an experienced mentor in situations where different paths and methods can be followed, such as creating alternatives or choosing among existing alternatives when faced with a difficult situation. Educational leaders need to be proactive and strategic in order to make the most of the benefits offered by AI and to find solutions to the problems associated with it (Langeveldt, 2024). Therefore, an educational leader who can empathize, take moral responsibility for his/her decisions, and create value should know where, when, and how to use AI tools and be a role model for educational stakeholders in this sense. It is essential that those in positions of educational leadership take the necessary steps to objectively identify and evaluate the potential impacts of AI on all key stakeholders in the educational sector. They must also address the various barriers to the adoption and utilization of AI within their own organizations and strive to facilitate the acquisition of the essential skills required to use AI (Wang, 2021).

Despite these contributions of AI to educational leaders, according to Holmes et. al. (2019), machines are better at repetitive tasks, computational tasks, categorizations, and decision-making based on concrete tasks. On the other side humans are better at experiencing authentic emotions and building relationships, asking questions on different scales, deciding how to use limited resources, making products and results usable for people, and making decisions based on abstract values. Therefore, no matter how effective and useful it is, human expertise, judgment, and intervention are needed for AI to be successful in educational administration. It should be noted that while AI continues to automate many types of basic skills, soft skills such as communication, leadership, empathy, and adaptability will become increasingly important in the future (Shah, 2023). While it is possible to talk about AI's potential to transform educational leadership, it should not be seen as a magic wand without human presence, opinion, and influence in human-intensive educational organizations. Thus, educational administrators should not view AI as a goal in educational administration, but rather as an important tool to improve the quality of education and to produce solutions to the problems that arise. In particular, with regard to matters pertaining to human values and ethical considerations, the capacity of artificial intelligence to provide sufficient guidance may be limited. Consequently, it is imperative for educational administrators to consider some ethical concerns such as data privacy, algorithmic bias, and transparency when utilizing AI for decision-making purposes. It is incumbent upon these administrators to formulate policies and guidelines that ensure the responsible and ethical deployment of AI technologies in matters pertaining to the education system at large, as well as in specific instances pertaining to individual educational institutions. Additionally, it is of paramount importance for them to take the requisite security measures related to this technology.

Disclosure Statement

No potential conflict of interest was reported by the authors.

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