

Developing Excellent Educational Leadership in the Artificial Intelligence Era

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Abstract

Developing excellent educational leadership in the artificial intelligence era is one of the very vital foundations of national development in the field of education. National education faces increasingly complex challenges and demands high competition. The research method used was a qualitative approach, namely a literature review. The main study sources chosen are related to the educational context in the Artificial Intelligence era, its characteristics, and the changes that occurred in that era. Educational leadership development is an effort that must be done because there are very rapid changes in the context of the educational environment. The development of excellent educational leadership can refer to personal characteristics and leadership criteria from various empirical studies in the context of the Artificial intelligence era. In line with the notion of leadership, excellent leadership is produced through a process that involves learning through experience, knowledge, and skills that are carried out intentionally, through formal education training, and mentorship. The development of excellent leadership can also be done by applying the national educational philosophy of *Ing ngarso sung tulodo, ing madyo mangun karso, Tut wuri handayani*. Leadership development is done also through empowerment, setting an example, inspiring and motivating, as well as providing significant support. Becoming a good leader also starts with being a good follower.

Keywords: Artificial Intelligence era; Excellent Leader; Leadership, Development

INTRODUCTION

Referring to the main elements in determining the Human Development Index (HDI) nationally and regionally, the education sector is one of the main elements determining the nation's progress, apart from the economy and health. This means that development in the education sector is the development of quality human resources. Through education, educated human resources will be produced who are expected to be able to run the wheels of national development. National education is a strategic area to be managed so that progress in other sectors can be realized.

The very complex field of national education requires smart management strategies. Success in managing national education is determined by educational leadership (macro, meso, and micro) (Hoy & Miskel, 2013). Because the educational process is also a holistic competency development process, including future leadership, it must also be managed by excellent educational leadership. Studies in the field of educational leadership also continue to develop theories, concepts, and empirical research to determine leadership patterns that are effective and relevant to the context of time and changes in the internal, external, and global environment in the field of education.

Every leadership has a specific context, so no one approach applies to all leadership contexts (Bolden & O'Regan, 2016), therefore educational leadership must adapt to

changing contexts that occur. The context and environment of national education continue to develop and change, and even very rapid changes occur. This change in the educational context or environment is triggered by various factors, including economic globalization, which is supported by the very rapid development of science and technology. By various groups, the progress achieved today by the development of science and technology has brought world society, including education, to the Artificial Intelligence era. The current educational context has changed very rapidly so various challenges and problems are faced in the field of education. The big challenge that must be faced by the education sector is how to prepare human resources that can compete and have an impact nationally and globally. The problem faced in the Artificial Intelligence era is that various human jobs have been replaced by automatic machines or robots, and at the same time many new types of jobs have emerged. In such conditions, education management must adapt to changing demands to remain relevant and provide a meaningful impact.

Because leadership is a determining factor for success in education, both at the macro (national) level, as well as at the meso and micro levels, namely provincial and district/city areas including institutions or educational units, excellent leadership is needed, leadership that can manage intelligently. the area or scope of responsibility is based on the requirements and demands of the new context, in this case, the Artificial Intelligence era.

To be able to develop excellent educational leadership that is appropriate to the context of the Artificial Intelligence era, you must first understand the characteristics of these two contexts. The term Industrial Revolution 4.0 was coined by Klaus Schwab, which is also called the digital revolution which has occurred since the middle of the last century, characterized by a combination of technologies that blur the boundaries between the physical, digital, and biological fields (Schwab, 2016). These terms are then sorted backward into the stages of development of the Industrial Revolution 1.0, 2.0, and 3.0. Industrial Revolution 1.0 was marked by the discovery of the steam engine and production machines as well as agricultural equipment which brought about a change from livestock power to machine power. The industrial revolution 2.0 was marked by the discovery of electricity and lighting which increased human productivity.

The Industrial Revolution 3.0 was marked by the discovery of computers and accompanying devices that changed things to an electronic writing system with all its practicality. The Industrial Revolution 4.0 was marked by the discovery of the Internet which can connect one computer device to another computer and connect to databases throughout the world. The Industrial Revolution 4.0 is characterized by various discoveries that have an impact on the way humans work beyond previous eras. In this era, increasingly sophisticated discoveries are developing thanks to the combination of various cutting-edge technologies, for example, automation systems, the Internet of Things, cyber-physical systems, industrial IoT, artificial intelligence, and big data (Guzmán et al., 2020). The impacts of the Industrial Revolution 4.0 include turbulent competition, uncertainty, complexity, and ambiguity (Satria & Mustiningsih, 2019).

The concept of Smart Society 5.0 emerged in Japan as a response to the excesses of IR 4.0 (Satria & Mustiningsih, 2019), namely seeking a balance between the roles of humans

and technology, due to the loss of several types of jobs. Apart from that, there is also the emergence of the need for new values as a guide in the new context. The emergence of Smart Society 5.0 allows for collaboration between industrial technology and social activities in economic development which can solve problems simultaneously (Satria & Mustiningsih, 2019). The Smart Society 5.0 concept is here to bring back human-centered technological progress, a balance between the roles of humans and technology, and a balance between the real world and the virtual world, thereby being able to solve various problems in the world more effectively, including in the education sector.

Svetlana Sharonova stated that the concept of the society 5.0 era moves from the era of the discovery of the internet to the concept of the internet society era, then the digital society era, and then the smart society era (Sharonova & Avdeeva, 2019). Since the invention of the internet, there has been an acceleration of change that demands adaptation. This very rapid change occurs because of the speed of development of information technology. This progress has an impact on providing a higher level of economic development in society. Along with these changes, the impact is to change not only human life but also a new way of thinking. The birth of the smart society era gave rise to new awareness, new values, new norms, and new behavior. Furthermore, this causes a paradigm change (paradigm shift), a new landscape (new landscape), and a new emphasis (new emphasis). Paradigm changes and new landscapes are marked, among other things, by the emergence of new generations and new technological modes in education (Sharonova & Avdeeva, 2019). The characteristics of the new generation as students are characterized by grasshopper thinking, multitasking, and sketchy and short-term memory. Meanwhile, new technological modes in education are characterized by the emergence of new modes of learning such as adaptive learning, virtual reality, gamification, and interactive distance learning such as MOOCs which have penetrated education such as Edx, Coursera, Udacity, Khan Academy, etc. This change of course also penetrates the world of education throughout the world, including in Indonesia. With this changed context, how can the development of excellent educational leadership be carried out?

METHOD

The research method used was a qualitative approach, namely a literature review. The main study sources chosen are related to the educational context in the Artificial Intelligence era, its characteristics, and the changes that occurred in that era. Next, the second source of the literature review is related to educational leadership, effective leadership in schools and higher education, and excellent leadership characteristics in the field of education which are associated with excellent leadership characteristics in the business and industrial fields. The next study is an analysis of various literature related to the excellent leadership development process. It is hoped that the literature review that has been described can provide an ideal conceptual framework for developing excellent educational leadership in the Artificial Intelligence era.

RESULT AND DISCUSSION

Efforts to develop excellent educational leadership can be understood through the conceptual framework of the position of educational leadership in formal educational units

such as schools or universities. Referring to the framework developed by Castillo and Hallinger, leadership plays a very important role in influencing the performance of educational units at every level of education (Castillo & Hallinger, 2018). Educational units such as schools and colleges are managed by leadership. Quality leadership is preceded by very adequate personal characteristics (antecedent). These characteristics can of course be innate from birth, but can also be formed through an educational process, whether formal, informal, or non-formal. Furthermore, governance can run when leadership carries out its function as leader and manager. Leadership has a big influence on building culture and relationships between people, including educators and the students they lead. As a manager, leadership carries out management functions, namely planning, organizing, actualizing, and controlling as well as monitoring and evaluating. Through managing existing resources such as finances, infrastructure, processes, and quality, leadership is expected to improve school or college performance as indicated by various parameters such as the quality of graduates and the impact of graduates in society (Castillo & Hallinger, 2018).

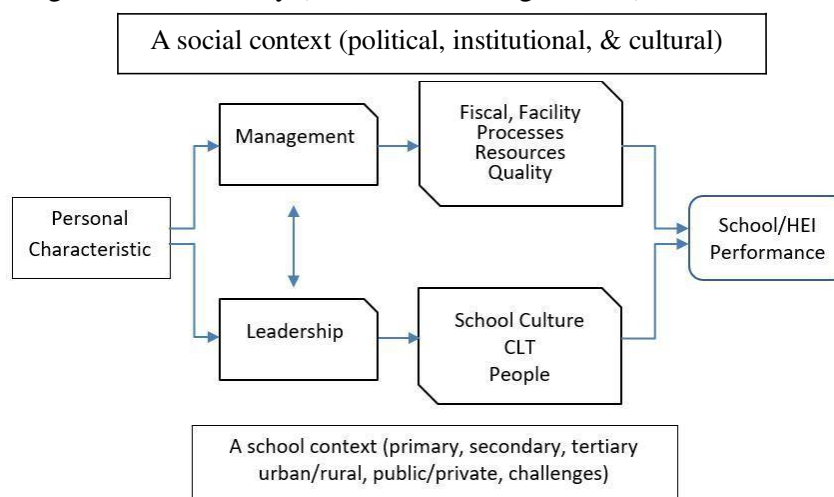


Figure 1. Conceptual Framework for Educational Leadership (Source: Castillo & Hallinger, 2018)

The educational process that takes place at school or college cannot be separated from its context. The first context is the school context which is related to the school level, primary school, secondary school or college, the place or area of existence of the school, private or state, including in this context the internal challenges faced by the school or college itself. Meanwhile, the social context of a school or college is related to the political, institutional, and cultural conditions in which the educational environment is implemented (Castillo & Hallinger, 2018). Based on this educational leadership framework, the development of excellent educational leadership can refer to personal characteristics and leadership criteria from various empirical studies appropriate to the context of the Artificial Intelligence era.

The development of excellent leadership in the Artificial Intelligence era is based on the context of changes that occurred in these eras. Just as developments in science and technology have implications for changes in work procedures and organizations, so too do changes in work procedures and organizations have implications for leadership

requirements. Roux (2020) explains that the first evolution of organizations and work procedures started from the division of work in organizations with a chain of command system. At that time a formal leadership role with a stable hierarchy and repeatable processes was needed. In the postmodern era, the emphasis is on collaboration rather than competition, which is based on equality and empowerment. All stakeholders in an organization need services that focus on organizational culture, training, and teamwork. The digital era that dominates the Artificial Intelligence era, pays deeper attention to the impact of the organization as a whole and deeper development regarding ethics. They support self-management, emphasizing the integrity of people and their goals within the organization (Roux, 2020). In summary, the nature of today's organizations is described by Heerwagen (2016): learning and more agile, focused on value based on the customer perspective, adapting to dynamic competitive needs and strategies; less hierarchical in structure and decision authority; less likely to provide lifelong career and job security; and continuously reorganize to maintain or gain competitive advantage (Roux, 2020).

The emergence of artificial intelligence, automation of production processes, and many other factors as the main characteristics of the Industrial Revolution 4.0 and the era of Society 5.0 influence how organizations work and how leadership plays a role in them. In increasingly complex and fast-paced developments where change becomes the norm and where orientation becomes a scarce resource, competent leaders are needed who can construct and create shared meaning relevant to the current context (CEC Report, 2017), including in this case: leadership in the education sector.

Based on organizational characteristics, jobs, and work requirements in the Artificial Intelligence era, several studies describe the characteristics of excellent leadership in the education sector. The leadership platform in the Industry 4.0 era and Society 5.0 era is full of communication and information technology or digital technology. Characteristics of excellent educational leadership that are compatible with these conditions include Visionary, reflective, good listening, role models 1) communication skills that can explain clearly, 2) the ability to capture and determine a clear and strategic vision, 3) can provide and managing required resources and managing workload, 4) being able to inspire and encourage the implementation of the Tridharma of excellent PT, 5) involving colleagues in making important decisions, and 6) encouraging open communication and creating a positive and collegial work atmosphere (Bryman, 2007; Virkus & Salman, 2020). Educational leadership at the school level has good teaching competencies, namely pedagogical multiliterate, personality and professional competence, discipline, honesty, and confidence (Satria & Mustiningsih, 2019).

Three important aspects that must be built in educational leaders in the digital era are digital literacy, technological literacy, and human literacy (Aoun, 2017). In tertiary education, leaders who are continuously willing to learn new knowledge and experiences, new mindsets, new skills (reskilling), high adaptability (adaptive), and high agility (agile) (Mulyono et al., 2020). An era where creativity and critical thinking give birth to creative and innovative ideas requires leaders who are creative and think critically, able to develop ideas into innovative and valuable products (entrepreneurship and idea generation skills). In school, it is not much different from higher education, the leader needed is someone

visionary, adaptive, explorative, a learner, and skilled in making decisions (decision-making skills) (Djafri et al., 2020).

The priorities that educational leaders must build at this time are trust, formulating strategies, obtaining results, and maintaining perspective (Bolden & O'Regan, 2016). The reason why trust must be prioritized first is that in this era, just like business organizations, educational organizations are becoming transparent, and there is access to data; values, services, etc., without trust there are big obstacles. Educational leaders must build relationships with the community, and deliver what the leaders promise, and leaders must be trusted as navigators. In formulating organizational strategies, including educational organizations, leaders must be willing to learn to adapt to their intuition and take approaches through strategic thinking and strategic planning (Bolden & O'Regan, 2016). About strategic thinking and strategic planning, what a leader must have is the ability to see far into the future, in other words, the leader needed is a visionary leader.

The ideal foundation for understanding the development of excellent leadership should start from an understanding of the meaning of leadership itself. Northouse (2019) summarizes the meaning of leadership in one short but insightful sentence, namely the process by which an individual influences a group of individuals to achieve a common goal (Northouse, 2019). This definition itself emphasizes that a leader is formed through a process that involves learning through experience, knowledge, and skills that are carried out deliberately. Leadership development through a process also means that leadership effectiveness develops through interaction with a group of individuals being led. In other words, good leadership is not immediately formed without going through a certain process where various aspects of competence such as knowledge, skills, values, attitudes, and ethics are imparted. Leadership development can be done through learning from personal experience and the experiences of others (Reyes et al., 2019) and applying it through learning by doing.

Developing excellent educational leadership can be done through formal education. Apart from being honed through practice in the field, educational leadership competencies can also be equipped through formal education at tertiary institutions, such as pursuing education in administration or educational management at the bachelor's, master's, or doctoral levels. Apart from formal education at universities, leadership development can also be carried out through training designed to develop specific competencies of educational leadership. Because educational leadership does not only talk about structural positions but also functional ones such as teachers in schools and lecturers in universities. The development of educational leadership in teachers and lecturers certainly refers to their main duties and functions as educators, trainers, motivators, and mentors. Apart from that, the excellent competence of teachers and lecturers is part of the prerequisites for educational leadership. Teacher and lecturer leadership development is related to basic competencies, namely pedagogy, personality, social, professional, and information and communication.

Leadership development can be carried out directly in the field through mentoring, coaching, and problem-based frameworks (Darling-Hammond et al., 2007; Reyes et al., 2019). Senior leaders facilitate, train, and guide the leadership cadres under them (Bolden

& O'Regan, 2016; Shalka et al., 2019). Because leadership is not just a series of theories and procedures, a leader's maturity can be formed through an intensive mentorship process. Good leaders give birth to good leaders too. The success of a leader is not measured by the performance and results of the work of the organization he leads but is also measured by the birth or emergence of new leaders from the empowerment process carried out by senior leaders.

This universal concept of successful leadership in the Indonesian context exists in the national education philosophy put forward by Ki Hajar Dewantara, namely *Ing ngarso sung tulodo, ing madyo mangun karso, Tut wuri handayani*. This meaningful philosophy can become a framework for thinking and framework in developing and implementing excellent educational leadership in Indonesia. This concept emphasizes a process of transmitting educational leadership that not only includes learning in the classroom but also includes excellent leadership in various sectors at all levels. Successful leadership development is carried out through empowerment, through leaders who set examples in the broadest sense, inspire and motivate, and provide significant support so that excellent educational leaders are produced. Ki Hajar Dewantara's educational philosophy also means that being an excellent leader also starts with being a good follower. A person or group of people can lead well when he or she is also a follower who is willing to commit to the existing leadership.

CONCLUSION

Characteristics of excellent educational leadership that are compatible with the Artificial intelligence era, include visionary, reflective, good listening, role model, skilled at communicating, able to provide and manage resources, able to inspire and encourage performance, making decisions wisely engaging colleagues, creating a positive work atmosphere. Educational leadership competencies for teachers, namely pedagogical multiliterate, personality and professional competence, discipline, honesty, and confidence. Three important aspects that educational leaders must master in the digital era are digital literacy, technological literacy, and human literacy. In higher education, leaders who are continuously willing to learn new knowledge and experiences, new mindsets, new skills (reskilling), high adaptability (adaptive), and high agility (agile). In this era of disruptive innovation, leaders are needed who are creative, think critically, and focus on solutions. The priorities that educational leaders must build at this time are trust, formulating strategies, obtaining results, and maintaining perspective. Excellent leadership is produced through a process that involves deliberate learning and experience, knowledge, and skills. The development of excellent leadership is also carried out through personal experience and the experience of others and applying it through learning by doing; through formal education and training, and mentorship. The development of excellent leadership can also be carried out by applying the national education philosophy *Ing also sung tulodo, ing madyo mangun karso, and Tut wuri handayani*. Development is carried out through empowerment, leading by example, inspiring and motivating, as well as providing significant support. Becoming an excellent leader must also start with being a good follower.

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