

# Role of Transformational Leadership in Education 4.0

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**Abstract:** Educational leaders have a central role in advancing educational institutions. The success or failure of educational institutions is greatly influenced by the ability of principals as leaders to be able to carry out motivational and innovation activities. The development of the era that continues to occur bring the industrial 4.0 where the era of technological development, information and communication has spread to various aspects including the field of education. The purpose of this study is to determine the role of transformational leadership in facing the challenges of the industrial 4.0. This study uses a qualitative research approach with the study literature review technique. The result of this discussion is the role of transformational leadership in having a strategic position in facing the era of education 4.0. Transformational leadership is done through building commitment and awareness among all stakeholders of educational institutions to actualize themselves and use technological advances, information and communication in the education process.

**Keywords:** education, industrial revolution 4.0, leadership, transformational leadership

## 1. INTRODUCTION

Education is an activity that will continue throughout the ages. Along with the development of the era, education experiences various kinds of obstacles and challenges. One of the challenges now being faced in education is the ability to be able to adapt and develop education in the era of the industrial revolution 4.0. The basic principle of industry 4.0 is the integration of machines, workflows and systems, by applying intelligent networks along the chain and production process to control each other independently [1].

The era of the industrial revolution 4.0, known as the era of disruption, will indirectly bring many changes to the education system in Indonesia. The development of education in the 4.0 era will require humans to be able to change the way of thinking and working in managing educational institutions. Education in the industrial revolution 4.0 demanded not only to transfer knowledge and attitudes, but in the current era of education it is also expected to be able to transfer technology. Therefore, we need people in educational institutions that are able to carry out their duties and responsibilities to carry it all out. This is where the need for the role of educational leadership through the principal to be able to think creatively and innovatively to be able to adjust developments in the 4.0 era.

Educational leadership is the ability to create the most effective changes in group behavior [2]. Educational leaders are the main and first figures who must be able to adjust developments in the 4.0 era. Principals as leaders of educational institutions are required to be able to innovate and be creative in managing educational institutions so they

can keep up with the times. An education leader must be able to give birth to the latest ideas in accordance with progress 4.0 which leads to the use of cyber-based digital media in managing educational institutions. One way that education leaders can do this is through the new literacy movement, namely: digital literacy, technological literacy and human literacy.

The role of educational leaders is very important to support the new literacy movement in the 4.0 era. Leaders of education should be able to direct teachers and learners to understand and implement the literacy third. Digital literacy aims to improve the ability to read, analyze and use information in the digital world known as Big Data. Technology literacy is used to provide knowledge and use in machine and technology work events to support various activities. As well as human literacy aims to improve the ability of humans to communicate and master design science.

The role of educational leaders in running the new literacy movement is certainly not easy and needs to be supported by various parties in carrying out the movement, namely the need for commitment and awareness of all elements to jointly change the old paradigm into a new paradigm by utilizing the development of information and communication technology. The use of information and communication technology has become very important because in the industrial revolution 4.0 the role of information and communication technology cannot be expanded in the management of educational institutions. The era of the industrial revolution 4.0 is characterized by the use of information and communication technology through the use of cyber-based media in supporting the

educational process.

In addition to the factors support of teachers and support facilities, an educational leader in the industrial revolution 4.0 also should be able to have competence in accordance with the duties and functions as a leader and manager of the education agency that should be able to do the activities such as planning, organizing, implementing, controlling and evaluation activities. Educational leaders in the industrial revolution 4.0 era must also be able to carry out their functions as an educational leader as a motivator and innovator in their educational institutions. Because educational leaders determine the direction and goals, provide guidance and create a work climate that supports the progress of educational institutions.

One model that can be used by school principals in carrying out school leadership can be done through transformational leadership models. Transformational leadership focuses on the commitment and capacity of organizational members [3]. Transformational leadership as the process by which leaders take actions to raise awareness, increase motivation and encourage them to go beyond personal interests in achieving organizational goals. Increasing commitment and capacity are considered to be able to produce greater business and productivity [4].

The view that the role of transformational leadership is very important in creating learning and teaching systems in the modern era through the thinking of poles with technological, flexible and smart learning approaches [5]. From this explanation it can be seen that the leadership actors become a strategic component in the administration or management of educational institutions in the midst of the challenges of the industrial revolution 4.0 era, so in this discussion the author will explain the role of transformational education leadership in facing challenges in the 4.0 era. This is expected to be beneficial for educational leaders in preparing themselves to adjust and face challenges in managing educational institutions in the era of the industrial revolution 4.0.

## **2. METHOD**

The method used in writing this article uses qualitative methods. This method is used to describe the role of transformational education leadership in the era of the industrial revolution 4.0. The technique used in this study uses study literature review techniques. The literature review study technique is a description of the theory and other research material obtained from various sources of reference to be used as a basis for conducting research activities and facilitate the preparation of the framework for the formulation of the problem to be investigated. This review literature study was obtained from various reference sources such as scientific journals, books, internet, documentation and literature.

## **3. DISCUSSION**

### **3.1 Education in the Industrial Revolution 4.0**

The quality of Indonesian education must continue to be improved in accordance with the development of the industrial revolution era 4.0. The results of the PISA (Program for International Student Assessment) study in 2011, a study focusing on literacy, mathematics and science, showed Indonesia's ranking could only occupy the bottom 10 of 65 countries, whereas in 2015 Indonesia ranked 69th out of 75 countries in the world. The results of this study indicate there needs to be a change to improve the quality of education in Indonesia in the industrial revolution 4.0 era so that it is not left behind by other countries.

Education in the industrial revolution era 4.0 is a combination of people and technology. The 4.0 industrial revolution through the process of digitizing manufacturing which is driven by four factors: (1) availability of data capacity, computerized systems, and connections; (2) analytical skills and intelligence; (3) the process of interaction between humans and technology; and (4) the process of digitizing transfer [6].

There are four principles of the industrial era 4.0 [7]. First, interconnection, namely the ability of machines, devices, sensors, and people to connect and communicate with each other through the Internet of Things (IoT) or the Internet of People (IoP). This principle requires collaboration, security and standards. Second, there is transparency of information systems to make virtual copies of the physical world into digital models. Third, technical assistance which includes; (1) the ability of an aid system to support people by consciously combining and evaluating information to make the right decisions and solve urgent problems in a short time; (2) the ability of the system to support humans by performing various tasks that are unpleasant, too tiring, or insecure; (3) includes visual and physical assistance. Fourth, decentralized decisions which are the ability of virtual physical systems to make their own decisions and carry out tasks as effectively as possible.

The era of the industrial revolution 4.0 had a significant impact on the education system in Indonesia. Along with advances in technology, information and communication result in changes in learning systems that place more emphasis on the use of digital-based media. The presence of the industrial revolution 4.0 can have a positive impact on the education system with a large number of technologies that can help with work assignments. The presence of technological innovations also has an impact on expanding access through on-line systems so that services become more efficient and have a broader range because all can access anywhere and at any time during the availability of facilities and infrastructure as well as adequate internet access. However, the presence of the industrial revolution 4.0 will have a negative impact when

not accompanied by the readiness of human resources as well as the facilities and infrastructure that are needed.

Education in the industrial revolution 4.0 was marked by a change in the way of learning from the conventional one using old methods to modern education in new ways. Education in the industrial revolution 4.0 is no longer merely a learning process that is limited by classrooms or time, education in the industrial revolution 4.0 demands for the widest possible openness of access to the use of communication and information technology through digital and cyber-based learning systems. The presence of the classes on line, that learning is not limited to the meeting in the classroom, but the learning process can be carried over long distances with classes on line, online books, online presence and more activity-based learning online.

Learning in the 4.0 era was oriented towards digital lifestyles, thinking tools, learning research and the workings of knowledge [8]. Learning orientation in the industrial revolution 4.0 is a way of working knowledge, strengthening thinking tools, and digital lifestyle. The way knowledge works is the ability to collaborate in teams with different locations and with different tools, strengthening thinking tools is the ability to use technology, digital tools, and services, and digital lifestyles are the use and adjustments to be able to use digital products.

The era of industrial revolution 4.0 is not enough to just emphasize the achievements of science as a product, but also must emphasize the various dimensions of life skills as explained earlier through the application/utilization of technology. The content of learning must always adjust to changes, including in the industrial era 4.0 [8]. Learning content is expected to meet 21st century skills consisting of literacy skills, skills and character quality. Literacy skills include scientific, technological, financial, cultural and numerical literacy. Skills include the ability to think critically, creativity, communication and collaborative. Character quality includes inquiry, initiative, perseverance, adaptation, leadership, cultural, and social awareness.

The education industrial revolution 4.0 emphasizes the importance of equipping students for Higher Order Thinking Skills (HOTS). One taxonomy of thinking used is Bloom's taxonomy and has been revised by Anderson & Krathwohl [9]. Bloom's taxonomy is revised, explained 6 levels of thought processes, namely remembering (C1), understanding (C2), applying (C3), analyzing (C4), evaluating (C5), and creating (C6). HOTS are at the C4-C6 level, namely analyzing, evaluating, and creating [9]. HOTS include the thought process of analyzing, evaluating, and creating; and so that someone is able to carry out the thought process must have the ability to think logically, critically, and creatively; so that it can solve the problem.

### ***3.2 Transformational Leadership in the Education Industrial Revolution 4.0***

Leadership has a strategic role in management activities, because the core of management activities is leadership. Leadership is essential for developing and making schools effective [10]. Leadership is a person's ability to move others to want to do activities in accordance with what they are ordered. The school principal as the leader of education has a central role in the management of educational institutions. The success of an educational institution in achieving its goals cannot be separated from the role and ability of the school principal as an educational leader. The characteristics of educational leaders namely; forming output, focusing on group products, decision makers, encouraging and proactive, having initiative and innovation, shaping the character, culture and climate of the organization [11].

Principals as leaders of educational institutions are required to be able to carry out their functions as a person who can bring change for the better in accordance with the development of the education industrial revolution 4.0. School principals are one of the education components that have the most role in improving the quality of education [12]. In carrying out its function as an educational leader, managerial skills as well as leadership skills are required. The ability of principals in the era of the industrial revolution 4.0 is challenged to be able to conduct leadership well that can lead to changes in educational institutions by utilizing advances in technology, information and communication through various kinds of innovation. One-way education leaders can do is through transformational leadership models.

Transformational leadership is a leadership model that focuses on the commitment and capacity of organizational members [13]. Through the transformational leadership model, the school principal strives to build commitment to the teachers and education staff to jointly develop educational institutions. The higher commitment, the easier it will be for schools to achieve the goals of educational institutions.

Transformational leaders motivate followers by: (1) making them more aware of the importance of the results of a job; (2) encourage them to prioritize the organization or team rather than their own interests; and (3) activating their higher needs. The formulation includes three components of transformational leadership namely; charisma, intellectual stimulation and individualized attention [14]. The essence of transformational leadership is sharing of power by involving subordinates together to make changes.

The four dimensions of transformational leadership through the 4i concept, namely: (1) idealized influence, is behavior that results in respect and confidence; (2) inspiration motivation, is behavior that is able to inspire and motivate others; (3) intellectual simulation, is a leader who is able to come up with new ideas and provide

solutions; (4) individualized consideration, namely the act of listening and attention to the people they lead [4].

There is at least the ability of educational leaders needed in the modern age like today such as the ability to think critically, collaboration, communication, creativity and innovation, global connections and the use of technology and learning tools [15]. Principals in the industrial era 4.0 can be summed up into three parts: firstly, the ability to interact and work together with others, secondly the ability to be able to think creatively and innovatively and thirdly the ability to use learning tools in accordance with technological development.

Transformational leadership is leadership that has a vision of the future and is able to identify changes in the environment and be able to transform these changes into the organization [16]. Transformational leadership is needed in developing educational institutions in the education industrial revolution 4.0. Principals as educational leaders are required to be able to transform the work climate and adjust the development of science and technology for the advancement of the educational institutions they lead. Through transformational leadership the principal tries to move the existing human resources in the education environment to innovate in the learning process. The ability of principals to move teachers, staff and students together to utilize digital technology in the learning process will be very beneficial so that it influences the achievement of the goals of educational institutions.

Transformational leadership in the era of education 4.0 is done through the activities of an educational leader through improving organizational performance, generating commitment from all stakeholders involved and increasing satisfaction and trust in all people involved in educational institutions. The success of transformational leadership is largely determined by human resources through various holistic efforts.

#### 4. CONCLUSION

Technological progress and development will continue without interruption. The era of revolution 4.0, known as the era of disruptive innovation (Disruption), targets all lines of life including the education sector. Educational institutions as a place to process science and develop the potential of students must be able to follow developments in the era of the industrial revolution 4.0.

The role of educational leadership in facing the challenges of education 4.0 can at least be done through the transformational leadership model. The transformational leadership model requires schools to be able to collaborate and utilize all their abilities to see and anticipate technological progress through a series of managerial activities to prepare human resources and facilities that support the educational process in the industrial revolution 4.0. The role of transformational leadership as an agent of change in an organization. Transformational leadership seeks to utilize human resources and increase the

commitment of all stakeholders of educational institutions to be very important in implementing education in the era of the industrial revolution 4.0.

Advances in science and technology in the industrial revolution 4.0 had a significant impact on changes in the way they think and work. The education industrial revolution 4.0 is the combination of people and technology that cannot be avoided. Here we need the role of educational leaders who are required to be able to continue to make changes to a better direction.

Principals as educational leaders are expected to be able to carry out their duties properly and make changes through their leadership by utilizing all the potential and abilities possessed by existing human resources. Through transformational leadership the principal can be a solution to keep abreast of developments in the industrial revolution 4.0 era by utilizing information and communication technology in the development of digital-based education. However educational leaders will not be able to work alone, therefore the support of teachers, students and the school community is needed to jointly develop education in the industrial revolution 4.0.

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