

# THE CHALLENGE OF CHANGE OF THE PRINCIPALSHIP ORIENTATION IN THE ERA OF INDUSTRIAL REVOLUTION 4.0

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**Abstract**—This paper tries to explain the various challenges of changes in principalship orientation in relation to the demands of educational leadership in the industrial revolution era 4.0, with a background case illustration in Indonesia oriented towards entering the era of education 4.0. The study is carried out by taking 'discovery-explorative' thinking methods. The results obtained that the important role of the principal in the future must be oriented to three main roles, as institutional leaders, as change leaders, and as digital leaders. These three important roles will greatly support the principal as a global leader.

**Keywords** : *Leadership, Industrial Revolution, Principal, Change*

## I. INTRODUCTION

The principals' competencies both in the managerial dimension and the academic dimension are faced with new challenges in the 4.0 industrial revolution era. Competence in managing change and school development towards effective learning organizations (Minister of National Education Regulation No. 13/2007) has signaled that new challenges must be overcome. Competence that is closely related to the principal's instructional leadership role, as conceptualized by Mirfani (2009) and Philip Selznick (in Hoy and Miskel, 1987: 307), is in line with the contemporary role of the 4.0 industrial revolution era, the achievement of global leadership. In line with Stroiteleva, et.al (2018, 146) and Helen (2005), the challenges include determining specific characteristics to adapt the strategy of modernizing the socio-economic system and determining the main problems in the formation of Industry 4.0 in the modern world for a compilation of realistic and precise estimates of modernization and development of problem-solving perspectives. This is in the interest of establishing a fast 4.0 Industry and achieving global leadership in this area is very important. Furthermore, successful integration into the digital ecosystem is needed (Keuper et.al; 2018). For this reason, intermediary organizations can facilitate system-level transitions requiring structures and processes including capacity building for leadership at all levels of the system must be able to lead collaborative learning within and between schools (Hadfield & Ainscow, 2018). In short, a change in leadership orientation is needed for principals to enter the Education 4.0 era.

## II. METHOD OF STUDY

The study of thoughts on the principalship roles and the era of educational revolution, which is aimed at the challenge of reorienting the main role, was developed using the "discovery-explorative thinking" method. This is done considering the reorientation to the new challenges that require the footing basic values in addition to the disclosure of the potential value of a future community's life, as well as meeting its conformity with the concept of global leadership. This method is adapted from a method known as exploration attributes (Ganter and Obiedkov, 2016). Attribute exploration is a very general knowledge acquisition method, applicable to all kinds of situations and not restricted to mathematical questions. What we expect from the method is help with the classification procedure. The basic task is very simple: for a specific list of attributes, we find all the combinations of attributes that are meaningful. The original concept should be simplified as possible, avoiding everything that is not absolutely necessary and allowing the computer to do the technical. In this case, the application is not a computer, but consideration of the mind.

## III. THE BASIC PROBLEM OF THE PRINCIPAL

Institutional leadership is the responsibility of establishing the organization's mission, shaping its culture, and protecting and maintaining institutional integrity. Therefore the role of institutional leadership of principals is becoming increasingly important in the embodiment of the concept of school-based management (Duke and Canady, 1991). School-based management is intended as a concept designed to improve the quality of education. School-based management is defined, among other things, as a process in which decisions that directly affect the school are transferred from the head office to the school level. The principal is a key figure in all school decision making. Principals are key actors in educational reforms because they lead changes in schools (Pulkkinen, Rääkkönen, Pirttimaa; 2018). That means he is a school administrator.

School administrators are responsible for carrying out school management. Thus the objective of applying the concept of school-based management can be perceived as identical to realizing good school governance. The successful administrator is one who is able to realize an advanced, stable, and harmonious school. In other words, the main indicators of good

school management are schools that are effective, efficient and quality (transparent and accountable). If the efficiency and stability of the school system are produced by managerial processes, the quality and harmony of the school system are produced by the process of organizational communication, then the effectiveness and progress of the school system is the result of the process of institutional leadership. Institutional leadership also means change leadership, the leadership of principals who deliver the resilience of school institutions.

In the Indonesian national education system, principals have been placed in these positions and duties (PP No. 28/1990, articles 12.1 and article 30.1). However, in relation to a number of hopes to be able to play the role of responsibility in question it is a big obstacle if the professionalism of the principal has not grown steadily. Not only management factors generally occupy a weak position in the constellation of school education in Indonesia, but there is also a strong tendency for education administrators, especially principals, to be faced with conditions that make themselves powerless to make constructive changes to improve school performance he leads. Especially leading in the industrial revolution era 4.0 which is faced with the demands of four novelty, namely: new mental models, new learning styles, a number of new abilities, and a number of new structures (Jeschke, 2014). The main weaknesses in the role of institutional leadership of principals are the same as those described by Orlofsky et al. (1984: 313) that in such circumstances most administrators are only happy to maintain existing regulations. They can only appear as school managers. In these conditions, it is very difficult to expect the leadership of the head of the school to change as they should play a more role in the era of industrial revolution. Because in fact most of them feel as maintainers and assume that change should be doubted. Though education is running on the scene of global environmental change that is progressing faster. Indeed, each new cycle will create new problems and contradictions that need to be resolved (Lin & Miettinen, 2018).

Meanwhile, in accordance with Minister of National Education Regulation No. 26 of 2009 which was replaced by Minister of National Education Regulation No. 39 of 2012 and replaced with Permendiknas No. 15 of 2013 and also replaced with Permendikbud No. 17 of 2015 the implementation has been carried out by Institute for the Development and Empowerment of School Principals. Nevertheless, the solution to the problem of professionalism of the principal's workforce has not yet found a bright spot. It still requires breakthrough efforts to increase the competence of more progressive principals in the industrial revolution era 4.0.

#### **IV. DISCUSSION**

Improving the leadership competency of the principal's renewal should be appropriately directed at the interests of the resilience of school institutions as a

global leader. Discussing the resilience of a school's institution cannot be separated from the challenges, pressures, and demands of the school environment in question. All of these things can happen in connection with changes in the interrelated order of life, both those occurring outside the school environment and in the school environment. Changes in the order of life itself, in general, can occur quickly as a consequence of the modernization of people's lives where the school is located. Especially today which experts see as the era of globalization that has strong support from the advancement of science and technology, media communication and information, and transportation. It has even been anticipated to enter the era of society 5.0 which is marked by intelligent personal agents (Osorio, 2013)

Schools that are institutions of community life have long been seen as a vehicle intended to enable better learning for students. In this connection, the school is used as a better place to study. Thus the school is expected to provide a basis for the possibility of developing the human aspects of students in the optimal direction. The principals and school executive teams strongly influence the school climate and graduate teacher experience (Longaretti & Toe, 2017). The concept of invited leadership has been somewhat adjusted and now encompasses invitation both within one organisational unit and across organisational unit boundaries. By such an intention, it is hoped that in turn, it will have a positive impact on the progress of society, especially those around the school. Because it is appropriate if schools have a very strategic role in the nation's development process.

Such things have been realized by many parties. But the principal's insight into the purpose of school implementation is not enough to arrive at general purposes just as mentioned above, but he must arrive at what knowledge he should do to realize it. For that purpose, elaboration, which is divided into terms: purpose, mission, and objectivity; need to be harmonized with the main function of the school. Holmes and Wayne (1989: 41) include describing the school's important tasks in its four main functions, namely (1) providing a mechanism for distributing skills, (2) providing safeguards, (3) presenting teaching basic skills, and (4) introducing scientific disciplines. Strictly stated that the professional step for professional school administrators must be knowledge of what the school is doing is connected with the right mind about what should be done.

Assertiveness or strengthening of matters relating to school implementation goals seems to be increasingly urgent given the reliability of schools, in general, is still questionable. The reason could be that his existence had deviated from what was intended. Sometimes it functions as a kind of "ivory tower in the middle of the forest" and can even be a "prison" for its inhabitants. It is far from touch and even the user, society and its inhabitants are ensnared by routines that are not only boring but very tiring. They are confined by that habit. There is no passion and enthusiasm, let alone the desire

to increase efforts so that schools are progressing along with environmental changes.

The existence of sharp criticisms of the implementation of school education such as those voiced by Ivan Illich and E. Reimer (Dore, 1978: 131-140) clearly concerns the matters mentioned above. He questioned the existence of "schooling" even to the thesis that demands a change in the conception of education as a whole. Dore stated that: There is a school system which is an integral part of the dimensionality of modern society, a key mechanism in the election of that rottenness. A piecemeal change will be difficult, but one has started somewhere and it is just possible to begin the reformation of society by changing the whole conception and process of education.

The meaning of such conditions can be said that schools will tend to be in a crisis of selfhood or weakening of institutional resilience. Therefore, joint study, especially by related parties, is very important considering that schools as a system can experience entropy, namely a tendency to disorganize or chaos. Study results can be useful to avoid them. And if the situation does occur, then the study is expected to be able to identify opportunities and ways to overcome it. At least it will be able to avoid worse conditions.

In general, the need for change in school education comes from two environments, namely external and internal. Both educational environments provide pressure for change. Response to external environmental pressure is a manifestation of the mission of adaptation to education in change. While the response to the internal environment is a form of intervention mission of educational competition for the change.

The dynamics of the development of life that are so fast cannot be denied have put more and more pressure on personal and organizational life. So it is in line with the perspective of the systems theory of Ludwig Von Bertalanffy (1968) that if the increasingly strong pressure does not get a harmonious response, then the chaos of the system will inevitably occur, entropy occurs. The equilibrium point becomes disturbed. If it continues, then disorganization will occur, the system will be destroyed and even disappear. Such worst conditions are certainly not cool. Therefore, there is a need for back pressure in the form of a response that is able to make the system return to a new equilibrium point.

A maintained system equilibrium point, in the sense that it is always renewed and in accordance with the amount of pressure received can lead the system to exist. Thus the survival of a school depends on the internal capability of the system to put back pressure on the external environment pressure of the system. Means creating what is called "steady state homeostatic", borrowing the term physics-biology. Thus, it is increasingly clear that in schools there needs to be a change. For school organizations that have been able to learn (learning organization), it will not be too difficult to respond to demands for change (Senge: 1999). The

one study (Millward & Timperley, 2010) concluded that without the evolution from individual learning to learning by the organization the school would not be able to sustain its journey of continuous improvement.

That education has been recognized as having a strategic role in the development of a nation and even in human civilization. Education creates a future and therefore in relation to change, education also carries an intervention mission. Education must be seen as having the opportunity to be leading in determining how the environment should be formed. In this perspective, education must instead be a "pressure" on the outside environment and the environment is "forced" to adjust to the spirit of education.

In order to realize such an intervention mission, organizational intelligence is needed which among its characteristics grows high internal aspirations to excel. This is what Albrecht (2003) introduced as an appetite for change, which is one of the seven characteristics of organizational intelligence. Questions related to important indicators of the nature of appetite for educational change can be addressed including:

- Do products, services and forms of value delivery continue to foster environmental change in education?
- Are the mechanisms in the education system driving innovation, such as testing new ideas, developing new product teams, etc.?
- Are educators and education personnel motivated to find better ways to do their work?
- Are people at various levels allowed to question the ways they are accepted to do things?
- What is the "forest" of the education bureau (such as rules for rules, policies, and procedures) limited to small numbers?
- Will education leaders acknowledge their mistakes and overturn misguided ventures that don't work?
- Does management promote an atmosphere of openness and acceptance of change, and think about new and original ways of managing education?

In line with Anderson (2008) there are ten sincere messages for senior education leaders to dramatically improve the success of change efforts, namely:

- Create greater harmony, commitment, and support within our top executive team to ensure that they are individually and collectively do everything necessary to make our change efforts work.
- Model changes that we are questioning others.
- After we begin the change, stay involved and make the right contribution to the senior influence of the strategic level of change-forever until it's done.
- Develop an understanding of humans and cultural dynamics during change so that we can make intelligent decisions about how to deal with them proactively.
- Build a plan for integrating change. Stop releasing a lot of change efforts regardless of how to integrate,

supervise, or coordinate issues between them or with existing businesses.

- Set a realistic time. Stop using a random time that does not match the real needs of our change efforts or the ability of our organization to make changes happen actually.
- Build a critical mass to support change with significant involvement and input from various functions and communities directly affected by the change, or what is needed to succeed.
- Plan changes and the circumstances of our future as best as we can, and then set a mechanism and process to examine plans and results as we find the need to do so.
- Place the right people responsible for the change, and give them authority and support for success.
- If we use external consultants, contract with them to support change without over-controlling our future designs, or the way in which we lead change or involve our own resources.

The industrial revolution 4.0 will drive an increase in the efficiency and productivity of our current lifestyle (Diwan, 2017), which leads to:

- Increase in global income levels
- Improved quality of life with higher order technology
- Reduction of transportation and communication costs
- Creation of new products and markets
- Safer workplaces as dangerous jobs are taken over by robots
- Improved health services that lead to longevity

That human services are appropriate for purpose during the fourth industrial revolution must accept new and emerging ways that can be used to forge and develop human associations. The implications are complex and the solution is unclear (Neil, et.al, 2017). We can further examine how the dynamics of life relate to the demands of change. The pressure on life today by experts, among others, is assessed in relation to globalization. Held (Kirkbride; 2001) explains that present-day globalization is characterized by a variety of very strong innovations in transport infrastructure and communication and the meeting of government institutions and global regulation to the point of universal form. It can be said that the world is now borderless. And in fact globalization today has more influence on personal life, organization, society and the country than globalization in the previous era. Today's globalization is increasingly laden with opportunities and challenges. Transformationalists are seen as processes that contain internal opposition and countervailing. Li, Hou, and Wu (2017) explained that for development of high-end human capital that the governments should also launch public policy schemes for the protection of technological innovation and intellectual property. Also, governments should pay attention to cultivate and attract top talent for the implementations of the Science and Technology

Strategy and Talent Strategy. The Fourth Industrial Revolution is expected to increase productivity radically and contribute to creating the better world for the human being, although according to Park (2017) it has not proven fully yet and there are still debates about the real impacts of Industry 4.0 on increase in productivity and economic growth. On another view, there is complex governance of education in multiple and concurrent participation at various (supranational and global) levels in the current multi-stakeholder governance environment (Tavis, 2018).

The rapid development of information and communication technology (ICT) has strengthened and even is becoming evidence of the realization of a world without borders. Furthermore, ICT in the midst of globalization has brought fundamental implications by shifting the value of products and services from the physical to digital realms. Toffler (1990) describes (in "Powershift") that we are in an era of globalization which is characterized by a "super symbolic" culture. Transaction tools that were originally in the form of objects (paper or metal; money) can already be replaced by a new symbol in the form of electronic money. The essence is information that is packaged in digital facilities. Maynard (2015) reminded that as converging technologies become more sophisticated, there is an urgent need for a new generation of foresight capabilities that respond to their high-speed, nonlinear and tightly coupled trajectories. In the world of education, the acceleration of ICT progress has led to the transformation of learning through education.

According to Lebraud (2012) that education has the potential to improve learning outcomes in three ways: 1) facilitate access to content and experts, overcome time, location, and collaboration constraints; 2) personalizing educational solutions for students, helping educators adjust the teaching process, using software and interactive media that adapt to the level of difficulty of understanding and speed of each student; 3) aimed at the specific challenges of reducing the efficiency of the worldwide education system. What must happen to the school administration is to present digital leadership. Digital leadership is about transforming schools into exciting and stimulating institutions of learning where students are actively involved in applying and mastering concepts both in traditional ways and through the use of educational technology (Sherrill, 2015). There are three main components of digital leadership for the future: deeply understand people, digital organization, and drive and integrate key technology trends (Brett, 2019).

In connection with these changes, organizational experts divide three main characteristics concerning the special role of leaders (Kanter: 1983). First, imagination to new things. To encourage innovation, effective leaders help develop concepts that determine different organizations. Second, professionalism to appear. Leaders provide organizational and personal competencies, supported by training and development workforce, to carry out perfectly and provide more value than customers demand. Third, open to collaborating, leaders establish connections with partners who can

expand the reach of the organization, increase the presentation, or increase the power of work habits.

## V. THE MAIN FINDINGS

Based on the discussion above, we received a description of the school principals who came to be demanded to claim to be global leaders. For that there are three main important roles put forward by the principal, namely as a leadership leader, he is a change leader, and he is a digital leader. The visualization can be described as:

As a leader, the principal must be oriented towards realizing an advanced, stable and harmonious school system. An important task that must be carried out is to mobilize all those who support the system in the desired direction, collect, provide and utilize all necessary resources, and unite according to perception and movement according to the regulations that are in force.

The role of a change leader, the principal must be oriented towards developing renewal ideas, especially in dealing with generic problems and discussed actualizing them on all layers of the system. The first most important task must be directed when thinking outside the box. To then always initiate novelty (inventive, discovery or innovation), transmit and realize it.

Role as a digital leader, the principal must complete and build an organization digitalization environment, discuss and integrate technological trends, and combine all that is not in accordance with educational interests. The basic task he must prepare is the system and employees who are capable of running digital operations, trying to increase literacy about the field of communication and information, and encourage further improvement with all parties involved.

## VI. CONCLUSION

The professionalization of school principals as administrators requires efforts to meet the demands of comprehensive competence. The main competencies include the ability to carry out institutional leadership roles for school effectiveness and progress, school managerial roles for school efficiency and stability, and the role of organizational communication for school quality and harmony. In addition to improving global leadership competencies related to the ability and ability to improve the reliability of school institutions amid the globalization of the industrial revolution in the era of 4.0, it is also necessary to reorient the role of principals in strengthening and empowerment strategies in enhancing competence for digital leadership and leadership change roles. For all, some knowledge of the number of related experts is feasible to underlie efforts to improve school leadership leadership competencies.

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