

# Principal's Leadership to Improve the Quality of Early Childhood Education in the 4.0 Era

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**Abstract**—School principals are an internal school entity possessing a strategic influence on the creation and realization of the quality of school. Leadership is considered relevant for improving the quality of quality of Early Childhood Education (ECE) in responding the 4.0 era. Therefore, this study contributes to outline knowledge, skills, and personal traits needed by principals at ECE to respond the fourth industrial revolution. The data collection methods employed was in-depth interview to 10 selected ECE principals and documentation. Questionnaire was also used to gain the data about school principals' leadership skill. Finding shows that school principals' leadership competencies needed in the 4.0 era are understanding principals' role as leader of learning, leader of student entitlement, leader of capacity building, leader of community, and leader of resource management. Among those competencies, principals at ECE thought that school principal role as a leader of resource management is the most important aspect that impact to school leadership success in improving the quality of ECE. This study also reveals that a good school principal should perform good emotional intelligences that are self-awareness, social awareness, relationship management, and self-management.

**Keywords**—*principals' leadership; early childhood education; 4.0 era*

## I. INTRODUCTION

Early childhood (usually described as the period from birth to eight years of age) is currently receiving a great deal of attention, both internationally and in Indonesia. The government has invested significant funding in supporting early childhood education development. In Indonesia, Early Childhood Education (ECE) is categorized into two categories, formal and non-formal education. As stated at The Law No. 20 year 2003 article 1 number 14 that ECE as a formal education pathway is categorized as Kindergarten which develop program for children aged 4 – 6 years. Meanwhile, students aged 2 – 4 years derive to child care center as it is non-formal education.

In order to develop students' competencies at ECE, education system takes an important role as mentioned on Dictionary of Psychology that education is the institutional procedures which are employed in accomplishing the development of knowledge, habits, attitudes, etc. ECE is

important as the preparatory stage of school education. Moreover, an early childhood education preferably takes significant role in nurturing religious values and lifelong skills for children in the next future. Therefore, one of the priorities of the Indonesian government in its 2010 – 2014 strategic plans in education is increasing the quality of early childhood education by establishing a standard that standardize ECE services through the law of ministry of education and culture number 137 year 2014. The standard covers standard of developmental goals, standard of ECE teachers' professionalism, standard of content, standard of process, standard of facilities, infrastructure, management, and finance, and standard of evaluation.

Regarding to the arriving of globalization era, ECE also need to compete on a global level since new technological development and the spread of information has impacted the educational system at school. Thus, the role and responsibilities of principals are changes in significant ways to effectively suppose and lead teachers and all the members to improve the quality of school. Most educational activities, such as management administration, teaching and learning, etc. can utilize information to make ease the organizational management.

To respond the arriving of industrial revolution 4.0 on education system, a visionary leadership is needed. Davis [1] states that leadership is about direction setting and inspiring others to make the journey to a new and improved state of school. According to Asia-Pacific Regional Network for Early Childhood (ARNEC) report from 2009 leadership was highlighted as a key driver in achieving targeted outcomes for children. The general opinion is that a visionary leadership has immense impact to enhance school management in order to achieve qualified ECE at industrial era.

A prior research that existed before has focused on variation in leadership, management and administration, and what effective on early childhood leadership. The result shows that variation in leadership, management and administration patterns across settings indicated multiple leadership roles in diverse early childhood settings. Principals' role is revealed as leader as guides [2]. This finding suggests a need to identify what educational leadership needed in improving the quality of early childhood education in responding 4.0 era.

Another research that relates to this study is technology leadership for the twenty first century principals. This study explores some of the ways that the integration of technologies for teaching and learning has impacted the traditional roles and responsibilities of the school principal. The study revealed the roles and responsibilities of principals as technology leader and provided a model to guide positive action [3]. Based on the results findings, it is known that the issue relates to technology integration. Therefore, the ongoing research conducted is trying to understand the competencies needed by school principals in the 4.0 educational millieu.

Based on those explanatories, this paper raises a current issue related to the arriving of industrial revolution and provides a contextual framework in which school principals at ECE are able to undertake new leadership needed in the changing world at 4.0 era. Some discourses about the criteria of an ideal principal at ECE, the parameter of qualified ECE based on Indonesian education law, and selected examples of successful implementation of technology integration are provided in order to draw the profile of principals' leadership at ECE in the fourth industrial revolution.

Industrial revolution 1.0 is introducing mechanical production machine powered by water and steam at the end of eighteenth century. Meanwhile revolution 2.0 is introducing mass production lines powered by electric energy at the beginning of the twentieth century. The next era is industrial revolution 3.0 which identic with the use of electronics and IT further progression in autonomous progression at the beginning of the seventieth century. The industrial revolution 4.0 which is arriving at year 2011 – 2040 is based on cyber-physical systems [4]. Industry 4.0 is the integration of Cyber Physical System (CPS) and Internet of Things and Services (IoT and IoS) into industrial processes including manufacturing and logistics and other processes.

Leadership in organizations has a very big role in building relationships between individuals and forming organizational values. Principals of schools where outstanding sites that place a high priority on good communications and relationship with external stakeholders. Therefore, school principals should have competence and ability to fulfill their duties and responsibilities in the best possible way. Competency is defined as the combination of knowledge, skills, and personal traits that need to be present in a leader. The competencies needed are both technical and managerial skill. School principal requires to have knowledge, skills, and personal traits that need to be present in a leader [5]. School principals also require perform abilities on their duties and fulfill their responsibilities in the best possible way in order to model an ideal leader. This is because the challenges faced by a school principal nowadays are more complex.

The arriving of technology on daily activities is one of the challenges for principals on how to integrate technology in the organizational management. Moreover, the success of information technology used not only depends on how the technology could be operated well but also depends on the perceive of the user [6]. Therefore, the knowledge of the user related to technology used and how it works to manage educational systems is needed.

Meanwhile, the skills needed to respond the fourth industrial revolution are complex problem solving, critical thinking, creativity, people management, coordinating with others, emotional intelligence, service orientation, judgment and decision making, negotiation, and cognitive flexibility.

Regarding to the goal of education at ECE that is achieving students' growth and psychologically is preparing them as a young learner at primary school, educational system at ECE should facilitate them in achieving those goal. Therefore, early childhood schools' principal should fulfill requirements for early childhood leader and have adequate management skills. Furthermore, students at ECE are categorized as digital native that also use digital technology for learning. The fact suggests teacher to integrate ICT at every aspect of school focusing on teaching and learning process. As one of the responsibilities of school principals leadership is managing and leading people, a school principal should able to supervise teacher and all the staff members to conduct teaching and learning ICT. Besides that, schools' principal should able to model themself as technology leaders because technology can increase the role of principals as manager, administrator, and supervisor.

## II. METHOD

This research employed a qualitative approach in which the result emphasizes more on meaning. Hancock [7] reveals that qualitative research was conducted because researchers wants to explore phenomena that should be explored descriptively such as the process of a work step, the characteristics of an item and services, images, the notions of a variety concepts, etc. In this research, descriptive qualitative is used to explore school principals' leadership phenomena in improving qualified ECE at 4.0 era.

Questionnaires were used as the data collection method and content analyses as the method to explore how school principals' leadership skills at ECE. The informants were determined by selecting 10 selected principals at ECE in Surabaya. The questionnaire was developed by identifying the responsibilities of school principals as stated in the law of ministry of education and culture number 28 year 2010 about qualification requirements for ECE leader. Whilst data related to what kinds of personal needed by an ideal principal's leadership at the fourth industrial revolution was self-developed based on some sources and concept from scholars.

The stages are describes as follows: (1) collecting such literatures and data related to education leadership and the evolution of education 4.0, (2) defining the parameter of an ideal leader for organizational management at ECE and identifying the indicator of a qualified ECE based on the law, (3) Conducting in-depth interview to principals at ECE, employed the questionnaire to gain a data related to what kind of leadership skills implemented to respond 4.0 era, and conducted documentation study, (4) selecting/ deselecting information, (5) analyzing and synthesizing the information related to principals' leadership at 4.0 era, and (6) designing conceptual ideas to cover principals' leadership needed at ECE in the 4.0 era.

In this study, the data analyses tool was qualitative content analyses. A number of significant similarities and trends are then identified for further analyses. It is important to recognize wider evidence which represent school principal's perspectives about competencies needed in school leadership to respond industrial revolution. The data then categorize and unified. Principals were asked to estimate the percentage of employing the leadership skills in responding educational system at 4.0 era, then it categorized into classes based on data-driven analyses. Responses were coded based on the amount of occurrences.

**III. RESULTS AND DISCUSSION**

In determining school principals' competency, there are 3 aspect identified in this research; knowledge, skill, and personal traits. In relate to the core purpose of early childhood teaching and learning is to optimize students' growth, the educational systems at ECE should help students to have experience in learning by doing and learning by playing. To achieve this, principals and all schools members should provide an environment that facilitates students to achieve their competencies. In this case, school principal responsible for the outstanding educational outcomes and their leadership has been crucial in producing the environment where the outcome can occur.

Finding from in-depth interview shows that schools' principals reveal that the personal traits needed in the changeable world are performing good emotional intelligence that are self-awareness, social awareness, relationship management, and self-management, as described in detail below:

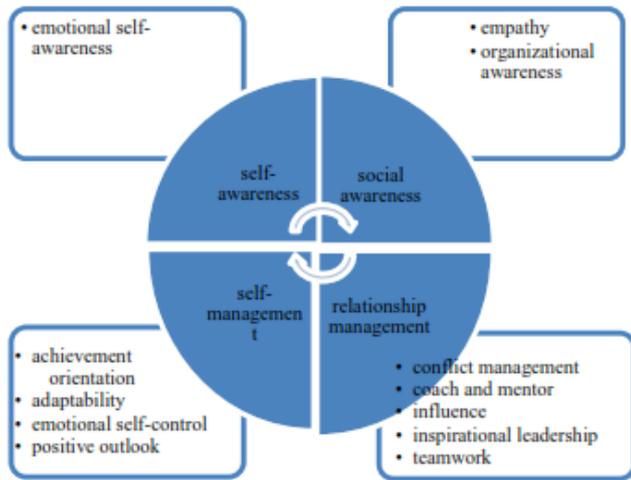


Fig. 1. Principal's Emotional Intelligence

The chart above shows that future schools principals should perform good emotional intelligence to succeed their leadership. The finding is in accordance with Caruso (2003) who found that leaders must be able to identify, use, understand, and manage their own emotions, as well as emotions of others. It is because the leader who can identify emotions has a high awareness not only on their feelings, but

also those of staff members. Donaldson (2006) presents a school leadership model has impacted to a current of change which mobilizes school improvement.

This study also shows common trends in the schools' principals' leadership skill. 10 principals were asked to estimate the composition of leadership skills needed to improve qualified ECE at 4.0 era and it was categorized in the questionnaire. Otherwise, principals were asked to describe what kinds of school principals' skills that are: 1) understanding principals' role as leader of learning, 2) understanding principals' role as leader of student entitlement, 3) understanding principals' role as leader of capacity building, 4) understanding principals' role as leader of community, and 5) understanding principals' role as leader of resource management. These findings are described as follows:

TABLE I. WHAT PRINCIPALS CONSIDER AS LEADERSHIP SKILLS NEEDED AT 4.0 ERA

No	Component	Percentage
1	employing principals' role as leader of learning	10%
2	employing principals' role as leader of student entitlement	10%
3	employing principals' role as leader of capacity building	30%
4	employing principals' role as leader of community	20%
5	employing principals' role as leader of resource management	40%

As shown in Table 1, principals at ECE thought that employing principals role as leader of resource management is the most important aspect that impact to school leadership success. In this capacity, the principal is responsible for the resources necessary for achieving qualified ECE through technology integration. Otherwise, these skills are intertwined with each other.

**IV. CONCLUSION**

This research clearly shows that an ideal school principal should have leadership's competencies that are ready to respond the challenging education system arriving at the fourth industrial revolution. Finding from in-depth interview shows that schools' principals reveal that the personal traits needed in the changeable world are performing good emotional intelligence that are self-awareness, social awareness, relationship management, and self-management.

Schools' principal leadership also needs such skills to craft the mission of developing quality service for early childhood. The skills are: 1) employing principals' role as leader of learning, 2) employing principals' role as leader of student entitlement, 3) employing principals' role as leader of capacity building, 4) employing principals' role as leader of community, and 5) employing principals' role as leader of resource management. All the skills are employed interconnected, but the most important skill that should be employed to respond educational system at 4.0 era is employing principals' role as leader of resource management.

In line with this information, a research about improving school principals' emotional intelligence skills to improve their leadership skills need to be explored further.

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