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## E-Leadership in Education in Improving Teacher Competence in Industrial Revolution 4.0

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### Abstract.

The technological transformation of the world is developing where globalization is at the stage of the Industrial Revolution 4.0 or commonly called the era of influential disruption in education. As one of the main pillars of school principals are required to carry out e-leadership in carrying out their duties and functions, while teachers are required to develop their competencies in facing this 4.0 era. This study studies the implementation of e-leadership in improving teacher competence in the 4.0 era. This research uses a qualitative approach with a case study. The research site is Madrasah Ibtidaiyah Azzainiyah II, Paiton, Probolinggo, East Java, Indonesia. The results showed that the implementation of e-leadership in improving madrasah teacher competencies, occurred through planning, organizing, directing and delegating and controlling.

**Keywords:** Leadership, Education, Teacher, Industrial Revoluation.

### 1. Introduction

The rapid development of information technology today is marked by increasingly smart technological advances and easy access to data influential in many areas of human life, such as social, economic, education, and others. In this era of globalization, Humans are connected by communication technology in their interactions [1]. World technology transformation is developing where globalization is at the stage of the Industrial Revolution 4.0 or commonly called the era of disruption. The era of the industrial revolution 4.0 has an impact that is not simple, but rather has an impact on all aspects of human life, including in the aspect of education. This is enough to cause mutual concern if

the personal successor or national generation considers character education / moral behaviour is no longer the main thing [2]. The existence of various changes in the order of life as a result of this era is both threats and challenges in the world of education, including education in Madrasah Ibtidaiyah.

Madrasah Ibtidaiyah Azzainiyah II as an institution providing basic education must be able to respond and offset the effects of this 4.0 era. The Madrasah Ibtidaiyah Institute is demanded to be able to provide more value to produce productive and dynamic output that has spiritual competence, critical thinking, creativity and innovation, interpersonal skills and communication, team collaboration, and self-confidence to compete in all areas of life [3]. Learning is said to work well if the learner can score superior students in terms of cognitive, affective, and psychomotor so that the three get a balance [4]. Also, there is a need for the readiness of Human Resources for education, namely teachers and principals in the use of appropriate information technology to support their tasks and functions in education [5].

Teachers as a driving force in improving the quality of education, teacher competencies need to be improved so that teachers can carry out their main tasks and functions properly, and with this rapid change, teachers must be more aggressive and capable of developing the abilities of each individual [6]. In reality, many Madrasah Ibtidaiyah Azzainiyah II teachers are less prepared for these changes, so they are still less technologically literate, have a static perspective, are less innovative and creative in carrying out their tasks and functions. Seeing this situation, it is difficult for schools to produce superior and quality educational output. The development of information technology has led to the emergence of various learning model innovations in the field of education [7] [8]. The innovative learning model emerged as an alternative solution to overcome various obstacles to traditional learning methods [9]. Therefore the role of the principal as a leader in carrying out e-leadership is one step to develop teacher competence in this 4.0 era [10].

Based on the above phenomenon, the researchers sought to analyze the implementation of the E-Leadership in improving the competence of teachers in the age of 4.0 in Madrasah Azzainiyah II, Paiton, Probolinggo, East Java, Indonesia [11].

## **2. E-Leadership Principal**

Traditional understanding, leadership is a process where someone influences others to achieve organizational goals. Whereas e-leadership is a person's ability to influence the behaviour of others in organizations mediated by ICT [12]. The emphasis of this understanding lies in the use of ICT as mediation between leaders and subordinates. Also, the concept of e-leadership is a process of social influence that emphasizes the social elements of the organization [13]. The purpose of e-leadership is to create and spread the vision of the organization, strengthen the relationship of members of the organization, direct and oversee the implementation of the plans set by the organization [14].

Principals as leaders in educational organizations have the main tasks and functions, namely planning, organizing, mobilizing, monitoring, and evaluating the process and results of education [15]. In addition to carrying out these tasks and functions, the principal also has the role of a visionary, convener, team sponsor, manager, and motivator for his followers [16].

In the 4.0 era where advances in ICT have created new spaces and cyberspace in human life [17]. Principals are faced with demands for the importance of implementing e-leadership as a solution to the problems that have been obstacles in carrying out their duties and roles [18]. The main causes of these constraints are a) the inadequacy of data and information technology support in the formulation of planning and management; b) the implementation of direction and control still uses the old-fashioned way; c) insufficient ICT support [19].

## **3. Teacher Competencies in Era 4.0**

Competence is a combination of personal, scientific, social, and technological abilities to succeed in life. The rapid development of science and technological progress has implications for the rhythm of teacher competence. The very striking implication is that people are increasingly free and easy (easy access) in obtaining information and knowledge, including in the field of education [20]. Teacher

competence, in Law No. 14 of 2005 it is stated that teacher competencies consist of four competencies, namely:

- a) Educational competence is the ability to manage student learning;
- b) Personality competence is the ability of a steady personality, morality and a role model for students;
- c) Social competence social is the ability to communicate and interact with members of the school organization; and
- d) Professional competence is the ability to master the learning material in depth.

Teachers as one of the important pillars in the school play a strategic role in the era of 4.0 this. therefore, teachers need to prepare for new eruptions in education. Teachers who do not have the readiness digital will suffer destruction, while teachers who have digital readiness to change will survive, because of the application and the beneficiary 's technology information will help improve the performance of teachers [21]. It can be understood that the old literacy that only focuses on reading, writing, and arithmetic needs to be strengthened again with data, technology, and human resource literacy as a new literacy. Data literacy is understood as the ability to read, analyze, and use digital data. Technology literacy is understood as the ability to understand technological systems and human resource literacy is understood as the ability to communicate and interact [22].

Digital transformation needs to be implemented by schools as a strategic step in responding to the changing education system in the current era [23]. Teachers are required to have supporting qualifications and competencies in addition to core competencies (pedagogic, physical, professional, and social). The supporting competencies include agility, innovation, creativity, anticipation, experimentation, open-mindedness, and networking. However, compulsory competencies are digital knowledge and digital experience [24]. Digital knowledge related to the teacher knows various digital applications that will be used to support his work.

#### **4. Research Methods**

This research uses a qualitative approach with a case study. Researchers try to describe and analyze the implementation of e-leadership in improving teacher competency in Madrasah Ibtidaiyah Azzainiya II, Paiton, Probolinggo, East Java, Indonesia. Data collection techniques are done by participant observation, in-depth interviews, and documentation. Data analysis techniques used are data reduction, data presentation, and concluding.

#### **5. Results and Discussion**

The results showed that the implementation of e-leadership in improving competence teacher at age 4.0, as follows:

##### **5.1. Planning**

Planning is the direction of action that has been determined previously. Principals in making this plan first understand how e-leadership works in the making and use of technology to support the formulation and making of the plan. Before deciding on a policy, the principal first takes an approach to all aspects related to the school. Through the approach, the principal can grasp the problem and its solution so that in deciding the policy according to the needs of the teacher. The headmaster in approach to finding this problem, use the instrument that is integrated with ICT, namely, google form.

##### **5.2. Organizing**

Organizing as a process of regulating human resources towards a common goal. Organizational structure drafting is important in the organization to know the duties and responsibilities of the human resources organization. Principals in carrying out the organization of activities and human resources use a combination of connectivity and the way the web works and software from service providers, namely blogs and Facebook. This organizing is carried out by the school principal by dividing large activities into smaller activities and assigning individuals to be responsible for these activities. Examples of organizing are carried out by the principal in preparation for work meetings. The school

principal divides the activity into small activities, then appoints a person in charge of each activity, and informs the preparation of the activity through the institution's blog and Facebook.

### 5.3. Directing and Delegation

Direction and delegation are carried out by the principal to achieve the planned and determined targets. The principal in giving directions and delegating to his subordinates, using ICT media and software provided by several software providers, such as e-mail, Whatsapp, telegram, google meet, and zoom meetings. This usage is certainly based on the level of optimization of each software due to the influence of the level of connectivity and geographical location.

### 5.4. Control

Control is needed by the principal as the leader in assessing the results of the party. The school principal to control the build information systems that can prepare a report containing the activities of the realization of the activities and achievements of periodic work achieved for users and managers through Dashboard Technology.

## 6. Conclusions

The implementation of e-leadership makes it easy for leaders and teachers to carry out their duties and functions in school. Also, this application has a positive and significant impact on increasing the effectiveness of school principals as leaders and developing teacher competence in the 4.0 era.

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