

# The Role of Educational Leadership to Support National Resilience: An overview of Era 4.0

Hikmat Zakky Almubaroq, Aan Komariah\* and  
Taufani C. Kurniatun

**Abstract---** *The aim of this study is to create a model of educational leadership in the 4.0 era to support national resilience. The method used is research and development according to the 4-D model (define, design, develop, disseminate). Data are taken from online surveys in the form of questionnaires, educational leadership workshops, and Focus Group Discussions. The educational leadership model to support national resilience, contains elements 1) Passion: love for the world of education; 2) Vision: end in mind or thinking from the end product; 3) Scenario skills: able to plan and anticipate; 4) Nationalism: understanding the history of civilisation and love cultural heritage; 5) Holistic, integral, comprehensive minded: broad-minded, interconnected and detailed; 6) Understanding the world of education: understanding the elements, components, and problems of education based on 3L; data literacy, technology literacy and human resources literacy; 7) Pancasila: understanding the values contained in each precept of Pancasila; 8) Prime concern for the public interest. This study contributes to the existing knowledge by providing useful insights on the role of educational leadership in era 4.0. Educational leadership 4.0 has given a great role in building national awareness of school citizens, forming a character that has a nationalism spirit and smart in implementing the country foundation. Leaders become strategic forces transforming progress through school policies and culture.*

**Keywords---** *Educational Leadership, Industrialised Era 4.0, National Resilience.*

---

## I. INTRODUCTION

The Industrial Revolution 4.0 is a period of change in world civilisation that is being faced by all countries (Schwab, 2016; Jones & Pimdee, 2017), including Indonesia. Industrial Revolution 4.0 is a combination of physical, digital and biological domains (Erol et. Al, 2016). This change in civilisation is no longer familiar with raw materials, like the first generation (steam industry), second (automotive), and third (automation). In this era, robot systems have begun to develop where all components are controlled by computers (Kagermann, 2015 Oberer and Elkollar, 2018). The 4th generation Industrial Revolution no longer uses material but uses cyber-physical systems, e-business, e-commerce, for example, the online-based transportation industry such as Gojek, Grab, and Uber. The Industrial Revolution 4.0 also includes the Internet of Things, Artificial Intelligence, New Materials, Big Data, Robotics, Augmented Reality, Cloud Computing, Additive Manufacturing 3D Printing, Nanotech and Biotech, Genetic Editing. To face this era, Indonesia needs to prepare human resources (HR) by increasing the skills of its workforce using digital technology. Dana (1987) also emphasise the importance of skill development by using modern-day techniques.

---

*Hikmat Zakky Almubaroq, Educational Administration Program, School of Postgraduate Universitas Pendidikan Indonesia.  
Aan Komariah\*, Educational Administration Program, School of Postgraduate Universitas Pendidikan Indonesia.  
Lecturer of Educational Administration Program, School of Postgraduate Universitas Pendidikan Indonesia. E-mail: aan\_komariah@upi.edu  
Taufani C. Kurniatun, Educational Administration Program, School of Postgraduate Universitas Pendidikan Indonesia.  
Lecturer of Educational Administration Program, School of Postgraduate Universitas Pendidikan Indonesia.*

Educational leadership is the key to efforts to create national resilience in education management. Steward (2014) explained how to maintain emotional resilience for school leadership driven by the country's need to compete in the global economy. Still, regarding emotional resilience research in schools, Ozmusul (2017) research on school policies and implementation found that they were not in accordance with the demands and expectations of school stakeholders. Research related to education and resilience was also explained in the context of organisational resilience (Southwick, 2017). Furthermore, Zehir, Cemal, Narçıkara, Elif (2016) have found the type of leadership that can increase organisational resilience and productivity, i.e. authentic leadership. The organisation will be strong in overcoming problems and crises by applying this leadership. Other studies on Industry 4.0 and Education produce a finding that Education in the 4.0 era is very concerned with the existence of technology. Information management is a force for the implementation of Education in the industrial era (Shahroom, A. A., & Hussin, N., 2018).

In the initial research of the author, several previous studies were found in connection with educational and educational leadership in the era of industrial revolution 4.0 (Collins & Halverson, 2018; Xing & Marwala, 2018; Collins, 2019) As for research that discusses the leadership of education on national resilience is still not much done. Furthermore, a construct that directs how educational leadership is built to play a role in supporting national resilience is very important to be formulated. Furthermore, research on how the leadership model in the 4.0 era to support Indonesia's national resilience, the research was conducted to find out the leadership model that is suitable and important to be applied in the era of the industrial revolution 4.0 even to support Indonesia's national resilience. So, the role of educational leadership makes efforts to support national security by manifesting in the resilience of student character.

## **II. LITERATURE REVIEW**

### ***Leadership***

In discussing Educational Leadership, the author sets out the theory of the iceberg system theory of Peter Senge as the first Grand Theory to support learning organisations. Senge (2006) states that there are five disciplines that represent approaches, both in theory and method, to develop three core learning abilities: fostering aspirations, developing reflective conversations, and understanding the complexities that exist within the organisational environment. This theory sees that a good leader is no longer just being reactive or anticipatory because he will be able to develop ideas to change for a better leadership system.

The second Grand theory carried by the author is the Theory U of Otto Scharmer. In his book, Scharmer (2009) states that Theory U principles are recommended to help political leaders, civil servants, and managers breakthrough past non-modelling behavioural patterns that prevent them from empathizing with their clients' perspectives and often lock them into a pattern of taking ineffective decision, and instead, foster innovative and creative mindset and practice. (Bass, 1985; Burns, 2008).

In this context, the five disciplines that ideally work as ensembles are systems thinking, personal mastery, mental models, shared vision, and team learning (Senge, 1990). The first three are personal, and the remaining two have a plurality of applications. Organisational learning through systems thinking has a difference as a 'fifth

discipline'. It is also the foundation of continuous improvement and feedback because it serves to make the results of other disciplines work together profitably (Senge, 1990).

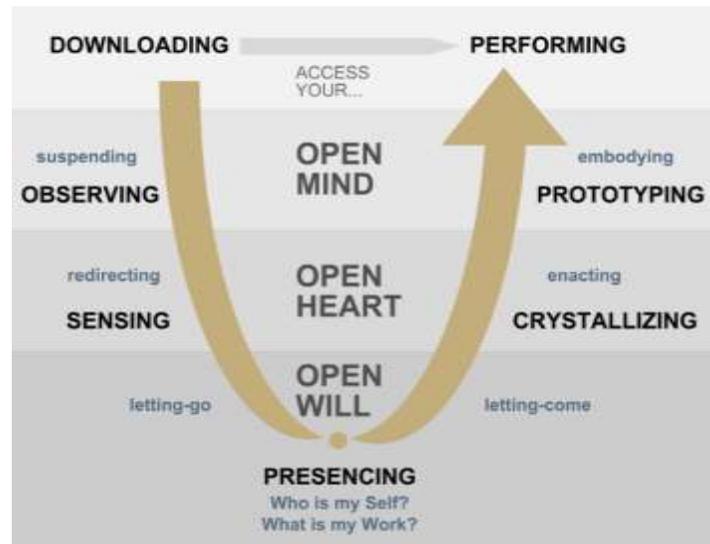


Figure 1: Theory U in Leadership

Source: Schamer, O (2009)

The founder of Theory U, Otto Scharmer, stated that Theory U is three things. First, it is a framework that describes the process of change. Second, this is a method for influencing change personally, organisationally, in the community and globally. And third, it is a description of phenomena in the world. (Hayashi, 2010, 2).

### ***Industry 4.0***

Industry 4.0 stands for 'the fourth industrial revolution' and is a term that refers to the rapid transformation in design, production, implementation, operation and service of manufacturing systems, products, and components. Industry 4.0, a German government initiative that promotes the automation of manufacturing industries to develop smart factories, is a disturbing paradigm, challenging the way producers think about knowledge-intensive industrial processes, making manufacturing more flexible, smarter, and more effective. If human, machine, and process are organised within a smart network, high-quality products can be manufactured faster, and competitive excellence by making the production costs more competitive can be achieved. Its main impacts come from five technology areas: Embedded systems, smart factories, strong networks, cloud computing and IT security (Bauernhansl, Ten Hompel, & Vogel-Heuser, 2014; Bienzeisler, Schletz, & Gahle, 2014; Henke, 2014; Baueur, 2014).

Industry 4.0 relies on several innovative technological developments such as information and communication technology (ICT), which is used to digitise information and integrate systems at all stages of product development and service, both within organisations and across organisations to monitor and control physical processes and systems and support human workers by using robots, smart devices, and augmented reality (Davis, 2015; Fraunhofer, 2013). Industry 4.0 digitises and integrates processes vertically throughout an organisation. Starting from developing and purchasing products, through manufacturing, logistics, and services, it can be concluded that

the term Industry 4.0 describes differences - particularly Driven Information Technology (IT) - changes in manufacturing systems. This development has not only the technology but also multipurpose organisational implications. (Bauernhansl et al., 2014; Lasi et al, 2014).

The industrial revolution 4.0 has an impact on all areas of business, therefore to succeed in implementing the industrial revolution 4.0, there are eight areas that must be considered, including standardisation, comprehensive communication structures, managing complex systems, resource efficiency, regulatory frameworks, safety and security, training and ongoing professional development and work organisation and design. (Bauernhansl, Ten Hompel, & Vogel-Heuser, 2014; Bienzeisler, Schletz, & Gahle, 2014; Henke, 2014; Baueur, 2014).

There are several preliminary research on educational research which has a correlation with this study. Castillo & Hallinger (2018) in his research which aims to advance understanding of management knowledge and education in Latin America. They carried out a topographical review of 48 articles from Latin America published in eight journals published between 1991 and 2017. The data analysis concentrated on analyzing the identified trends in the capital and highlighting variability in patterns of knowledge production. In particular, 75% of studies have been published in the last 10 years, and 56% in the last five years. Geographical coverage is very uneven throughout Latin America. While there are 19 articles from Chile, many Latin American communities are not represented in the database. Nearly 80% of the corpus consists of very diverse empirical and topical focus studies. Comparing these results with findings reported in a recent review of management research and educational leadership resulted in recommendations to increase the capacity of educational leaders in Latin America.

In addition, the Education Leadership character needed must also be able to adapt to Indonesia's needs in the face of the Industrial Era 4.0. Some of the characteristics needed by Education Leaders in Indonesia as adapted from the exposure of the Indonesian Ministry of Industry in collaboration with the Bandung Institute of Technology and Tsinghua University are: (i) having a vision and mission, values and beliefs about education that have the goal of realizing Education in the face of the Era 4.0. and increasing Indonesia's national resilience, which is then shared with teachers and students; (ii) responsive and can make decisions; (iii) have a purpose and attention to the development of the environment, both in the community, national and regional and global environment; (iv) able to adapt to learning with rapid and dynamic environmental changes; (v) has a wide network and is able to socialise well (UID-Tsinghua, 2018). In addition, Indonesian Education Leadership in the Era 4.0 must be able to adapt to technological developments, innovate and improvise, and be able to hear aspirations.

Education leaders in higher education must also be able to manage and develop the institutions they lead so that they are ready to face changes in the 4.0 era. Higher education institutions must be prepared to be able to produce learners who not only have a diploma, but are also tough and creative, and educational institutions that are able to analyze the dimensions of the profession in the future, so they can prepare appropriate methods and materials to answer the challenges ahead (Martianto, 2002). Education leaders are also required to be able to: (i) build the motivation of the community of educational institutions; (ii) determine direction and deal with change appropriately; (iii) becoming a catalyst that can colour the attitudes and behaviour of community educational institutions in work (Komariah & Triatna, 2015).

Furthermore, Bogotch, Schoorman & Guerra (2017) in the Bridging Educational leadership book, Curriculum Theory and Didactics express true history shows that the relationship between curriculum study and educational leadership is mediated by the conceptualisation of the curriculum adopted in the context of a particular community. For this purpose, they identified four curriculum conceptualisations that have been carried out in the United States and explored relationships that varied between the two fields that were interpreted in their respective contexts. Their analysis shows that only when the two fields of study have come together for the benefit of society, the common good, leadership and curriculum will emerge which results in progressive efforts in multiculturalism, democracy and social justice. For this reason, they offer a dialogical framework for the development that transitions from relationships based on stratification, homogenisation, transformation, and the stages they call leadership for social justice. This progressive dialogue is increasingly problematic because it has to navigate various obstacles to temporal and political policies and ideological differences. Thus, complicated conversations are among those who try to maintain old values and norms (for example Stratification and homogenisation) with those who take a counter (transformation), or a critical perspective (social justice).

Research on the relationship between education and resilience in education has been carried out by researchers in Australia. Mansfield, et al. (2016) propose a framework for building resilience in teacher education. The framework is informed by a focused review of relevant literature to determine the factors that can be overcome in teacher education to support teacher resilience and the ways in which this can occur. The findings show that personal and contextual resources along with the use of certain strategies all contribute to the outcome of resilience and that much of this can be developed in teacher education. Using these findings, a comprehensive resilience framework is proposed with five overall themes - understanding resilience, relationships, well-being, motivation and emotions. Possible implementations were also discussed in their research.

Other similar studies conducted by Bono and Judge (2004) examined the relationship between Big Five personality traits and transformational leadership. They examined 384 correlations from 26 independent studies and found the strongest positive correlation between transformational leadership and extraversion, and a negative correlation between transformational leadership and neuroticism.

Meanwhile, the results of research conducted by Komariah (2016) found that authentic leadership is positively correlated with awareness and openness to experience. This study aims to determine the relationship between Spiritual Intelligence and Leader Personality with Authentic Leadership Behaviour. This study uses a quantitative research approach with a type of correlational approach. This research was conducted in 77 principals of Islamic Senior High Schools in Tasikmalaya District. Sampling is done using a simple random sampling technique. The results showed that there was a positive relationship between Spiritual Intelligence and Leader Personality with Authentic Leadership Behaviour. The positive correlation coefficient shows that if Spiritual Intelligence increases, authentic leadership behaviour will also increase. Also with increasing Leadership Personality will increase the behaviour of Authentic Leadership. Spiritual Intelligence and the Personality of the Leader together influence significantly on Authentic Leadership Behaviour.

Further research on leadership models that form the basis of the construction of the leadership model studied was

conducted by Hoch et al. (2018) who compared three emerging forms of positive leadership that emphasised ethical and moral behaviour (ie authentic leadership, ethical leadership, and servant leadership). with transformational leadership in its association with various relevant steps in the organisation. While researchers have noted this overlapping concept between transformational leadership and leadership forms, there is an inadequate investigation of empirical relationships with transformational leadership and the ability (or lack thereof) of these forms of leadership to explain incremental differences outside transformational leadership. In response, they conducted a series of meta-analyses to provide a comprehensive assessment of the relationship between the forms of leadership that emerged and the variables evaluated in the extant literature. Second, they examine the relative performance of each of these forms of leadership in explaining incremental differences, beyond transformational leadership, in nine outcomes. They also provide an analysis of relative weights to better evaluate the relative contributions of emerging forms versus transformational leadership. The high correlation between authentic leadership and ethical leadership with transformational leadership coupled with a small number of additions indicates that their utility is low unless used to explore very specific results. Servant leadership, however, seems more promising as a stand-alone leadership approach that can help researchers and practitioners of leadership better explain the various results. This study also provides guidance on future research and the utility of three forms of leadership based on ethical/moral values.

Research on the relationship between education and resilience in education has been carried out by researchers in Australia. Mansfield, et al. (2016) propose a framework for building resilience in teacher education. The framework is informed by a focused review of relevant literature to determine the factors that can be overcome in teacher education to support teacher resilience and the ways in which this can occur. The findings show that personal and contextual resources along with the use of certain strategies all contribute to the outcome of resilience and that much of this can be developed in teacher education. Using these findings, a comprehensive resilience framework is proposed with five overall themes - understanding resilience, relationships, well-being, motivation and emotions. Possible implementations were also discussed in their research.

### ***National Resilience***

Resilience can be defined as the ability to regain balance after exposure to an unfortunate incident. Resilience is not the final condition of existence, but rather a process of progressive growth (Southwick et al, 2011). Individuals who can adapt to stress, rise from setbacks, maintain relatively stable, utilise resources to maintain well-being, and find personal growth as an adaptation to the current crisis (Southwick et al, 2014; Krystal, 2008; Reich et al, 2010). Whereas national resilience is related to the various ways that a comprehensive society uses to maintain its strength in facing extreme difficulties (Amit & Fleischer, 2005; Obrist, Pfeiffer, & Henley, 2010). It is argued that NR consists of four main components - patriotism, optimism, social integration, and trust in political and public institutions - which must be maintained in times of unresolved conflict and the ability of the state to overcome its difficulties (such as poverty, terrorism, or corruption) while keeping the social order intact. (Ben-Dor, Pedahzur, Canetti-Nisim, and Zaidise, 2002).

### III. RESEARCH METHODOLOGY

The method used in this research is research and development according to the development of 4-D models. The 4-D (Four D) development model is a development model of learning tools. This model was developed by Thiagarajan. The 4D development model consists of 4 main stages, namely: Define, Design, Develop and Disseminate. This method and model was chosen because it aims to produce a model of Educational Leadership in the era of 4.0 that supports national resilience. The 4D model is described as follows:

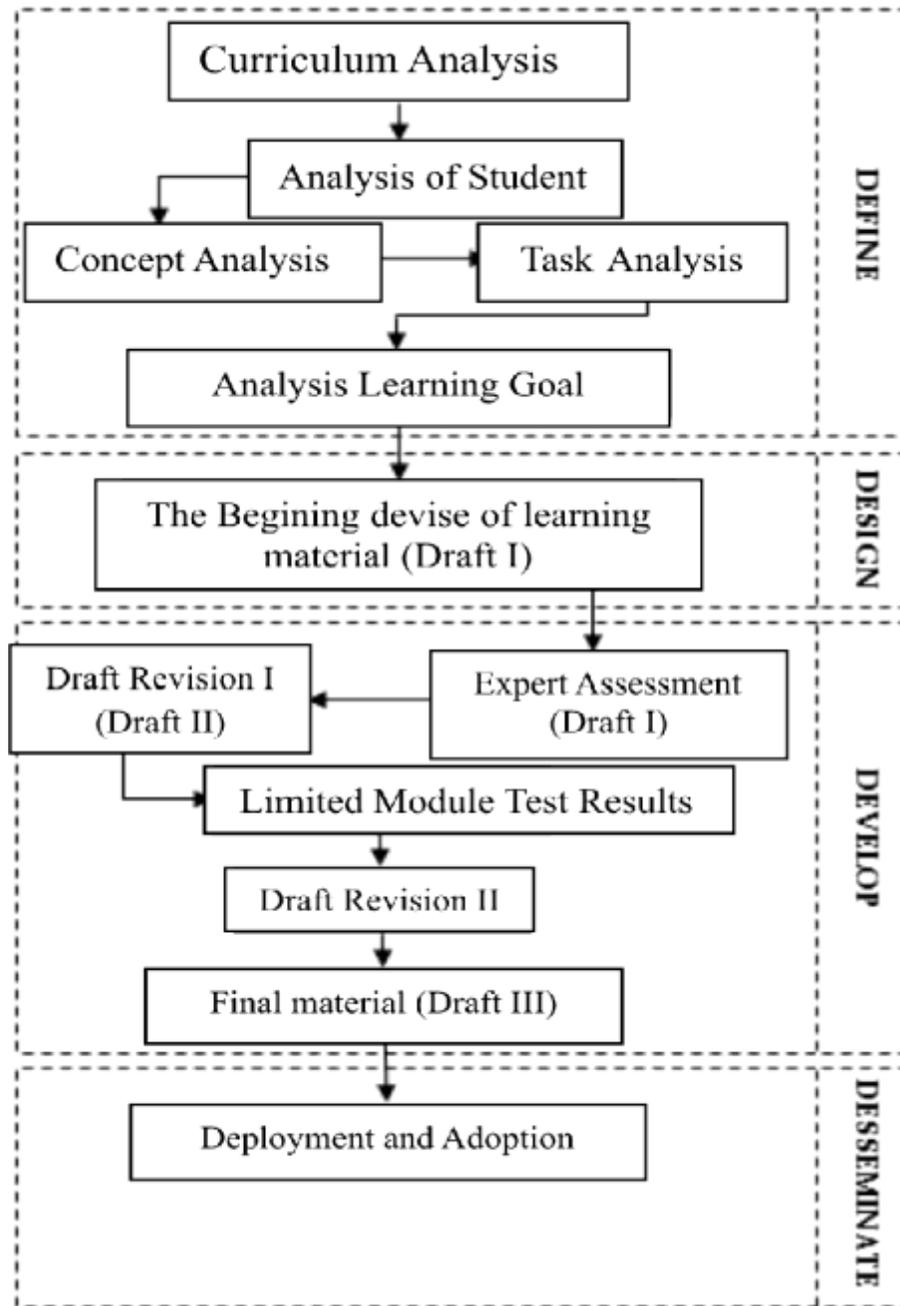


Figure 2: 4D Model

Source: Thiagarajan (Trianto, 2009)

The online survey using a purposive random sample method of Google form was spread to 239 respondents from all over Indonesia. The respondents were selected based on their backgrounds as educators, principals, lecturers, teachers, members of the National Army, police and graduate students from the educational administration department. The stages of data collection were carried out using questionnaires in the form of online surveys, workshops, focus group discussions (FGD)

Qualitative approaches are used as of the exploratory nature of research to find something new as a result of an analysis of educational leadership in Indonesia in which the data is taken from participants who are experts in the field of educational leadership in Indonesia. The samples were chosen based on the basic thought that each of the elements has their experience with educational leadership throughout their life and they felt the impact of the condition of quality of educational leaders. With the diversity of the respondents, it is hoped that the major impact of the research findings will be reached. The respondents participate in the survey by accessing the link provided. Data obtained from questionnaires were then analyzed using descriptive analysis methods.

## **IV. FINDINGS AND DISCUSSION**

### *Findings of the Research*

#### *Online Survey in the Form of Questionnaire*

Based on the results of the questionnaire distributed, data were obtained that a total of 158 (66.1%) respondents attended mass media coverage of the world of education in Indonesia. While the remaining 79 people (33.1%) said they were following the latest information in the world of education in Indonesia through mass media coverage but in less intensity.

As many as 160 people (66.9%) answered getting information about managing education in Indonesia from social media, television became the second-largest source of information followed by print media. 35.1% said they saw firsthand the process of managing education. When asked by respondents about the condition of Indonesia's education management abilities, as many as 91 people (38.1%) respondents answered the better, 56 people (23.4%) answered that they were still good, 47 people (19.7%) answered that they remained bad and 31 people (13%) answered worse. Furthermore, referring to the answer of 139 respondents (58.2%), they stated that education management had been implemented but not enough to support national resilience. The results of the questionnaire also showed that 87 people (36.4%) shared the opinion that education management had not been carried out to support national resilience.

When asked about the quality of national resilience in Indonesia, 172 respondents (72%) thought that the quality of national resilience in Indonesia was good but not optimal and 11 people (4.6%) stated that it was good. As many as 45 people (18.8%) stated the opposite. They argued that the quality of national resilience in Indonesia had not yet emerged.

In the questionnaire distributed, the respondents were offered five (5) unsupported national resilience causes in the education sector. Respondents were asked for opinions on the causes offered. The first cause is that Indonesian human resources as managers did not have the ability. A total of 105 respondents (43.9%) said they did not agree.

103 people (43.1%) agreed. The second cause is the corrupt culture of the education apparatus /a large number of levies. 124 respondents (51.9%) agreed, 55 people (23%) stated strongly agree and 46 people (19.2%) said they did not agree. The third reason offered to respondents was that government officials (regional and central) were unable to manage education. A total of 127 respondents (53.1%) agreed, 21 people (8.8%) stated strongly in agreement, while as many as 78 people (32.6%) stated they did not agree. The fourth cause is overlapping regulations, 153 respondents (64%) agreed and 53 others (22.2%) agreed strongly. The fifth cause is the presence of foreign interference in the management of education, 137 (57.3%) respondents stated they did not agree, while 78 (32.6%) stated otherwise.

The findings then showed that it is relevant with the previous research mentioned in the literature review section, but has distinctiveness in the area of national resilience in Indonesia, i.e. the idea of bringing forth a model of educational leadership which endorse national resilience.

### ***Leadership Model Training Workshop***

The leadership competencies found in the 4.0 era education leadership model that supports national resilience are smart, honest, virtuous, able to produce ideas and rules, patriotic, nationalist, technologically literate, in line with national goals, trustworthy, responsive, and empathic. The level of urgency of developing an educational leadership model that needs to be developed and disseminated to all educational leaders due to modernisation and rapid development of science and technology needs to be balanced with changes in culture, education research and public policy and coincides in the five precepts of Pancasila to fortify and strengthen national resilience.

### ***Focus Group Discussion (FGD)***

Based on the results of the FGD with the theme "Era 4.0 Educational Leadership Model to Support National Resilience", it can be seen that there are two variables related to education that are placed as independent variables that will be seeking to influence the dependent variable "National Resilience". The two independent variables are the "Educational Leadership Model" and "Quality of Students' Results". These two variables are important elements of our National Education System. The matter of national education certainly cannot be separated from the educational leadership and the quality of student outcomes that are largely determined by the process and content of education. In the context of National Resilience in the 4.0 era, there are at least two important contents that must be included in our national education, namely: "Nationality" and "Technology Mastery". The values of Indonesian nationality are a shared value born from the "will to live together" in our society, that is, a strong "will" to melt into one Indonesian building. This national will is a cultural transformation from ethnic nationalism to civil nationalism. The will to live together as a national value is a very important key for the survival of a Nation-State. A nation can survive and exist long if its people do have the will to survive together. But on the contrary, if the people no longer want to live together, then no matter how strong the economy, politics, military and security of a country, the nation can still be extinct. One example in history is the extinction of the countries in the Balkans despite having strong economic, military and political power.

Furthermore, by referring to the results of the survey and FGD, an educational leadership model was built to strengthen national resilience, namely: the 4D model, an educational leadership model in the era of 4.0 to support

national resilience that has the following elements:

- 1) Passion: love for the world of education, understanding the world of Education, understanding the elements of education, components and problems of Education based on 3L; data literacy, technology literacy and human resource literacy.
- 2) Vision: end in mind or thinking from the final end product. This is in line with the attunement of the leaders in managing education related to the concept of the iceberg system theory proposed by Peter Senge (2006). The ability of a leader to consider time and anticipate something that will happen in the future is part of the visionary indicators offered by the educational leadership model.
- 3) Scenario ability: the ability to plan and anticipate: This is in line with the view of Mansfield, et al (2016) who proposed a framework for building resilience in teacher education and Canetti, et al (2013) who raise issues related to national resilience considering various challenges to national security in democratic countries, such as terrorism and political violence, an increasing need for reconceptualisation of the term 'resilience' arises.
- 4) Nationalism: understanding the history of civilisation and love for cultural heritage.
- 5) Holistic, integral, comprehensive thinking: broad-minded, interconnected and detailed.
- 6) Pancasila is: understanding the meaning of the Pancasila precepts.

Other than that, the Educational Leadership character that is needed must also be able to adapt to the needs of Indonesia in facing the Industrial Era 4.0. Some of the characteristics needed by Educational Leaders in Indonesia as adapted from the exposure of the Indonesian Ministry of Industry in collaboration with the Bandung Institute of Technology and Tsinghua University are: (i) having a vision and mission, values and beliefs about education that have the aim of realizing Education in the face of the Era 4.0 and increasing Indonesia's national resilience, which is then shared with teachers and students; (ii) responsive and can make decisions; (iii) has a goal and attention to environmental development, both in the community, national and regional and global environment; (iv) able to adapt to the learning of rapid and dynamic environmental changes; (v) has a wide network and can socialise well (UID-Tsinghua, 2018). In addition, Indonesia's Educational Leadership in Era 4.0 must be able to adapt to technological developments, innovate and improvise, and be able to hear aspirations.

## V. DISCUSSION

The speed of technology that is marked by the era of Industrial Revolution 4.0 needs to be accommodated to be able to meet the learning needs in a modern way. This is in line with Suyoto (2018) who wrote that some of the abilities and skills that need to be fostered in students to deal with future industries are: (i) the ability to solve complex problems; (ii) ability to socialise and coordinate, negotiate, persuasion, mentoring, sensitivity and emotional intelligence; (iii) the ability to complete work processes that includes the ability to be an active listener, to think logically and be introspective; (iv) the ability to be able to make judgments and make decisions quickly while still considering cost-benefits and the ability to build and run the system; (v) cognitive abilities which include cognitive flexibility, creativity, logical reasoning; problem sensitivity; mathematical reasoning, and visualisation.

This model is in accordance with the Theory U of Otto Scharmer (2009) which emphasises the process of

travelling towards a direction that supports the journey of change that starts from the release of the old ego towards something that is consciously better, open-minded, has a complete relationship with stakeholders of education, has a strong intention, integrate themselves proactively rather than reactively in line with the goals shared by one another.

Educational leaders in higher education must also be able to manage and develop what they lead to make them ready to change in the 4.0 era. Higher education institutions must provide students who not only have a diploma, but are also resilient and creative, and educational institutions that can increase the dimensions of the profession in the future, so that they can install appropriate methods and materials to help transition forward (Martianto, 2002). Educational leaders are also required to be able to: (i) build the motivation of the educational institution community; (ii) determine the direction and regulate changes accordingly; (iii) becomes a catalyst that can reflect attitudes and community education institutions in employment (Komariah & Triatna, 2015).

This model is equivalent to the concepts put forward by Bogotch, Schoorman & Guerra (2017) who revealed history showing that the relationship between curriculum studies and educational leadership is mediated by the conceptualisation of curriculum adopted in a particular community context. Thus, following the interests of the nation and the state the curriculum and leadership related to national security are needed in anticipating various changes including the industrial era 4.0.

## VI. CONCLUSION

This research is an effort to formulate an educational leadership model that can support the achievement of national resilience. The leadership model is rooted in the soul of a leader who must have a high passion or desire to succeed and always discover new things. Moreover, educational leaders in this model must possess visionary leadership characteristics, scenario abilities, have a strong national outlook and think holistically, integrally and comprehensively. Their mindset must be whole and comprehensive so that it can consider all aspects related. Thus the 4.0 era education leadership model to support national resilience are 1) Passion: love for the world of education; 2) Vision: *end in mind* or thinking from the end product; 3) Scenario skills: able to plan and anticipate; 4) Nationalism: understanding the history of civilisation and love for cultural heritage; 5) Holistic, integral, comprehensive minded: broad-minded, interconnected and detailed; 6) Understanding the world of education, elements of education, components of education and education problems; based on 3L; data literacy, technology literacy and human resource literacy 7) Pancasila: understanding the values contained in each precept of Pancasila.

From the result of the survey, it can be seen that there is an implication of a strong need to commence an educational leadership model which could answer the challenge in managing the educational system in Indonesia. This overview then is becoming a recommendation to be used as the starting point in determining a particular model of educational leadership which support the national resilience during this industrialised revolution 4.0 era.

## REFERENCES

- [1] Amit, K., & Fleischer, N. (2005). Between resilience and social capital. In N. Friedland, A. Arian, A.Kirschbaum, A. Karin & N. Fleischer (Eds.), *The concept of social resilience* (pp. 83–107).
- [2] Bass, B. M. (1985). *Leadership and performance beyond expectation*. New York: Free Press.

- [3] Bauer, T. (2014). Oxford Handbook of Leader-Member Exchange. DOI-10.1093/oxfordhb/9780199326174.013.2
- [4] Bauernhansl, T., Ten Hompel, M., & Vogel-Heuser, B. (Eds.). (2014). Industry 4.0 in production, automation and logistics application, technologies, migration (pp. 1-648). Wiesbaden: Springer Vieweg.
- [5] Ben-Dor, G., Pedahzur, A., Canetti-Nisim, D., & Zaidise, E. (2002). The role of public opinion in Israel's national security. *American Jewish Congress: Congress Monthly*, 69(5), 13–15
- [6] Bienzeisler, B., Schletz, A., & Gahle, A. K. (2014). Industry 4.0 ready services technologie trends 2020. Stuttgart: Fraunhofer IAO.
- [7] Bogotch I., Schoorman D., Reyes-Guerra D. (2017) Forging the Needed Dialogue between Educational Leadership and Curriculum Inquiry: Placing Social Justice, Democracy, and Multicultural Perspectives into Practice. In: Uljens M., Ylimaki R. (eds) Bridging Educational Leadership, Curriculum Theory and Didaktik. *Educational Governance Research*, vol 5. Springer: Cham. [https://doi.org/10.1007/978-3-319-58650-2\\_8](https://doi.org/10.1007/978-3-319-58650-2_8)
- [8] Bono J. E., Judge T. A. (2004). Personality and transformational and transactional leadership: a meta-analysis. *J. Appl. Psychol.* 89 901–910.
- [9] Burns, J. M. (2008). *Transforming Leadership: A New Pursuit of Happiness*. New York: Grove Press.
- [10] Castillo, F. A., & Hallinger, P. (2018). Systematic review of research on educational leadership and management in Latin America, 1991–2017. *Educational Management Administration & Leadership*, 46(2), 207–225.
- [11] Collins, A. & Halverson, R., 2018. Rethinking Education in the Age of Technology, the digital revolution and schooling in America 2<sup>nd</sup> Edition. *New York and London: teachers College Press*.
- [12] Collins, R. 2019. *The Credential Society: An Historical Sociology of Education and Stratification*. New York Chichester, Wes Sussex: Columbia University Press.
- [13] Dana, L. P. (1987). Towards a skills model for entrepreneurs. *Journal of Small Business & Entrepreneurship*, 5(1), 27-31.
- [14] Davis, R. (2015). Industry 4.0. Digitalization for productivity and growth. *European Parliamentary Research Service*, PE 568.337. Retrieved from
- [15] Erol, S. dkk. 2016. *Tangible Industry 4.0: A Scenario-Based Approach to Learning for the Future of Production*. *Procedia CIRP* Vol 54 pp. 13 - 18.
- [16] Fraunhofer IOSP. (2013). Industry 4.0 - information technology is the key element in the factory of the future. Fraunhofer Institute of Optronics, System Technologies and Image Exploitation, PR, 31.01.2013, pp.1–5.
- [17] Hayashi, A. (2010). *Feminine Principle and Theory U*. Oxford Leadership. [Online] retrieved from <https://www.oxfordleadership.com/wp-content/uploads/2016/08/oxford-leadership-article-femine-principle-and-theroy-u.pdf>
- [18] Henke, M. (2014). *Management der Industry 4.0 – Herausforderungen und Handlungsfelder für die erfolgsorientierte Steuerung von Unternehmen* [Management of Industry 4.0 - Challenges and Fields of Action for the Success-oriented Management of Companies]. Presentation at Zukunftskongress Logistik 32. Dortmunder Gespräche, p. 5.
- [19] Hoch, J. E., Bommer, W. H., Dulebohn, J. H., & Wu, D. (2018). Do Ethical, Authentic, and Servant Leadership Explain Variance Above and Beyond Transformational Leadership? A Meta-Analysis. *Journal of Management*, 44(2), 501–529.
- [20] Jones, C., & Pimdee, P. (2017). Innovative ideas: Thailand 4.0 and the fourth industrial revolution. *Asian International Journal of Social Sciences*, 17(1), 4 – 35. <https://doi.org/10.29139/aijss.20170101>
- [21] Kagermann H. (2015) *Change Through Digitization—Value Creation in the Age of Industry 4.0*. In: Albach H., Meffert H., Pinkwart A., Reichwald R. (eds) *Management of Permanent Change*. Springer Gabler, Wiesbaden [https://doi.org/10.1007/978-3-658-05014-6\\_2](https://doi.org/10.1007/978-3-658-05014-6_2)
- [22] Komariah A. (2016). Authentic leadership behavior in Madrasah Aliyah in Tasikmalaya Regency Aan Komariah. *Jurnal Pendidikan Islam* 1 407–422.
- [23] Komariah, Aan dan Cipi Triatna. 2015. *Visionary Leadership Menuju Sekolah Efektif* dalam Aminuddin Syam. 2012. “Kepemimpinan Pendidikan yang Inovatif.” *Jurnal Al Ta’lim* 1 No. 2: 1531-157.
- [24] Krystal, J. H. (2008). Resilience: Accommodation and recovery. In J. Parens, H. Blum, & S. Akhtar (Eds.), *The unbroken soul: Tragedy, trauma and resilience*. Lanham, MD: Jason Aronson.
- [25] Lasi, H.; Fettke, P.; Kemper, H.-G.; Feld, T.; Hoffmann, M. *Industrie 4.0*. *Wirtschaftsinformatik* 2014, 56,261–264.

- [26] Mansfield, C.F. et, al. (2016). Building resilience in teacher education: An evidenced informed framework: *Teaching and Teacher Education* 54 77 – 87 <https://doi.org/10.1016/j.tate.2015.11.016>
- [27] Martianto Dwi Hastuti, 2002, *Pendidikan Karakter: Paradigma Baru Dalam Menentukan Manusia Berkualitas*, Makalah, Institut Pertanian Bogor.
- [28] Oberer, Birgit and Alptekin Erkollar.(2018). Leadership 4.0: Digital Leaders in the Age of Industry 4.0. *Journal of Organizational Leadership*
- [29] Obrist, B., Pfeiffer, C., & Henley, R. (2010). Multi-layered social resilience: A new approach inmitigation research. *Progress in Development Studies*, 10(4), 283–293.
- [30] Ozmusul, M. (2017). *We Need Resilient School Leaders in the Face of Chaos and Complexity*. Central and Eastern European Online Library Vol 2(1) pp. 17 – 25.
- [31] Reich, J. W., Zautra, A. J., & Hall, J. S. (2010). In J. W. Reich, A. J. Zautra, & J. S. Hall (Eds.), *Handbook of Adult Resilience* . New York, NY: Guilford Press.
- [32] Scharmer, C. Otto (2009-01-01). "Introduction" (PDF). *Theory U: Leading from the Future as It Emerges*(1 ed.). Berrett-Koehler Publishers. ISBN 9781576757635.
- [33] Scharmer, O. (2009). *Theory U: Leading from the future as it emerges*. San Francisco, CA: Berrett-Koehler.
- [34] Schwab, K. 2016. *The Fourth Industrial Revolution*. New York: Crown Business.
- [35] Senge, P. M. (1990). *The Fifth Discipline: The art and practice of the learning organization*. New York, NY: Doubleday.
- [36] Shahroom, A. A., & Hussin, N. (2018). Industrial Revolution 4.0 and Education. *International Journal of Academic Research in Business and Social Sciences*, 8(9), 314–319
- [37] Shahroom, A.A., & Hussin, N. (2018). *Industrial Revolution 4.0 and Education*. *International Journal of Academic Research in Business & Social Sciences*, 8(9), pp. 314 – 319.
- [38] Southwick, S. M., Bonanno, G. A., Masten, A. S., Panter-Brick, C., & Yehuda, R. (2014). Resilience definitions, theory, and challenges: Interdisciplinary perspectives. *European Journal of Psychotraumatology*, 5, 1–14.
- [39] Southwick, S. M., Litz, B. T., Charney, D., & Friedman, M. J. (Eds.). (2011). *Resilience and mental health: Challenges across the lifespan* . Cambridge, England: Cambridge Press.
- [40] Southwick, S.M. (2017). *Resilience: The Science of Mastering Life's Greatest Challenge 2<sup>nd</sup> Edition*. Cambridge: Cambridge University Press.
- [41] Steward, J. (2013). Sustaining Emotional Resilience for School Leadership. *Journal of School Leadership and Management* V. 34(1) pp. 52 – 68.
- [42] Suyoto. (2018). *Review Kurikulum Program Studi Pendidikan Agama Islam Fakultas Agama Islam Universitas Muhammadiyah Gresik. Unpublished*.
- [43] Trianto, (2009), *Mendesain Model Pembelajaran Inovatif-Progresif*. Jakarta: Prenada Media
- [44] Xing, B. & Marwala, T. 2018. Implications of the Fourth Industrial Age for Higher Education. *The Thinker\_Issue\_73\_Third\_Quarter\_2017*. [online] available at SSRN: <https://ssrn.com/abstract=3225331>
- [45] Zehir, C., & Narcıkara, E. (2016). Effects of resilience on productivity under authentic leadership. *Procedia-Social and Behavioral Sciences*, 235, 250-258.