

ARTICLE

## Teachers and Literacy in the Era of the Industrial Revolution 4.0

Marla Ma'firah<sup>a\*</sup>, Rina Mardiana Palembang<sup>b</sup><sup>a</sup>Universitas Negeri Padang, Jalan Prof Dr Hamka Kampus Air Tawar Padang Sumatera Barat, Indonesia, 25131<sup>b</sup>Universitas Negeri Manado, Jalan Kampus Unima Kec. Tondano Selatan, Sulawesi Utara\*Corresponding email: [mmafirah@gmail.com](mailto:mmafirah@gmail.com)

### ABSTRACT

The Industrial Revolution 4.0 has a huge impact on the world of education. Teachers as agents of change must be able to adjust to the development of science and technology. In the era of the industrial revolution 4.0, teachers are required to have technological literacy skills. With technological literacy skills, teachers can facilitate the needs of millennial students in the learning process. If the teacher does not have the ability to have technological literacy, the teacher automatically cannot deliver the subject matter needed by his students.

### ARTICLE HISTORY

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## 1. Introduction

In the 21st century, technological progress is moving rapidly, the country needs Human Resources (HR) which has three important pillars. The three pillars are literacy, competence, and character. In the World Economic Forum 2015, three pillars emerged, namely mastery of literacy, competence, and character. Literacy is not just a matter of literacy : literacy, science literacy, financial literacy literacy, and information technology. Indonesia is currently entering the era of the Industrial Revolution 4.0. The middle of the century (digital revolution) is characterized by a fusion of technology and blurring the lines of physical, digital, as well as biological space. The era of the Industrial Revolution volume 4.0 is less and less physically bound to geographical locations (Wihadanto, 2017). Because, all human activities convert from manual to digital.

In building a culture of literacy in the realm of education (family, school, community), since 2016 the Ministry of Education and Culture has intensified the National Literacy Movement (GLN). This GLN is part of the implementation of the Regulation of the Minister of Education and Culture Number 23 of 2015 concerning the Growth of Ethics. In addition to the Ministry of Education and Culture, GLN is also encouraged by stakeholders of literacy activists, academics, professional organizations, the business world, ministries, and other institutions (Ibrahim, 2017).

The Industrial Revolution 4.0 is synonymous with disruption, disruptive because almost all realms of life are converting from manual to digital. If we are faced with this confusion, then Indonesia's democratization bonus in 2045 must be prepared. Data from the Directorate General of PAUD of the Ministry of Education and Culture, Indonesia now has 33 million children aged 0-6 years. Teachers must build children's literacy skills, both old literacy (reading, writing, numeracy), and new literacy (data literacy, technology, and humanism). (Ibda, 2018).

Teachers and educational institutions should strengthen into various aspects. Start curriculum, systems, management, models, strategies, and approaches to learning with strengthening 21st century literacy skills. One of them is strengthening literacy skills in teachers and educational institutions from old literacy (reading, writing, numeracy) to new literacy (data, technology, human resources/humanism). The idea of new literacy has emerged formally on January 17, 2018 during the National Working Meeting (Rakernas) of the Ministry of Research, Technology and Higher Education (Kemristek Dikti). At that time, the idea of new literacy emerged as a form of preparation for the Ministry of Research, Technology and Higher Education to welcome the era of disruption. New literacy is data, technology and human resources. Humans must utilize and process data, apply it to technology and must understand the use of technology. Human literacy is important to survive in this era, the goal is that humans can function well in their environment and can understand interactions with humans. (KEMENRISTEK DIKTI, 2018).

If in the past we were only presented with old literacy (reading, writing, and numeracy), but now we have to apply new literacy such as data, technology, humanism (Ibda, 2018). From the literacy ability map above, it is very paradoxical to the literacy ability of the Indonesian people. The proof is that from the results of various researches and surveys, the literacy skills of the Indonesian people are still far from expectations. The lag will get worse when there is no preparation and strengthening of literacy in educational institutions.

Central Connecticut State University research in 2016 stated that Indonesia ranks 60th out of 61 countries. The results of the student assessment survey at PISA 2015 announced in early December 2016 showed Indonesia ranked 64th out of 72 countries. In the period 2012 –2015, PISA scores for reading ability rose by only 1 point from 396 to 397, while science rose by 21 points from 382 to 403, and mathematics rose by 11 points from 375 to 386. The results show that the ability to read, especially text

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documents in Indonesian children aged 9-14 years is in the bottom ten (Ibrahim, 2017). Literacy should not be just reading, because it is a complex ability. In addition to the four language skills (listening or listening, reading, writing, and speaking), literacy is defined as all efforts in obtaining knowledge and information. The computer-literate aspect and counteracting fake and fake news are included in it (Ahmadi, 2018).

From the explanation above, in the era of the Industrial Revolution 4.0 all teachers and educational institutions must respond quickly so as not to be left behind. Teachers must understand and master 21st century literacy that emphasizes data-based knowledge, technology, and humanism, not just the ability to read, write and count. Literacy skills lag far behind other countries, requiring education to strengthen literacy skills.

### **Challenges of the Industrial Revolution 4.0**

Industrial Revolution 4.0 is a term expressed by Prof. Klaus Martin Schwab, German engineer, economist and founder of the Executive Chairman of the World Economic Forum. The era of the Industrial Revolution 4.0 presents new business lines, jobs, new professions. Who would have thought of a job as a political buzzer, social media admin, and brand endorser. The threat, professions and jobs replaced by artificial intelligence machines and robots. (Editor Beritagar, 2018).

Revolutions have occurred throughout history when new technologies and new ways of understanding the world triggered major changes in the economic system and social structure. The Industrial Revolution 4.0 is not only machines and intelligent systems, its scope is much wider because it occurs simultaneously, namely in the form of breakthrough waves in various fields, gene sequencing to nanotechnology, from renewable energy to quantum computing (Schwab, 2017). The digital revolution and the era of technological disruption are other terms for Industry 4.0. It is called the digital revolution due to the occurrence of computer proliferation and the automation of recording in all fields. There are several industry 4.0 challenges. First, information technology security . Secondly, the reliability and stability of production machines. Thirdly, the lack of adequate skills. Fourth, reluctance to change stakeholders. Fifth, the loss of many jobs due to turning into automation. (Yahya, 2018). The position of humans in Indonesia is currently in a period of disruption or uproot. If you used to want to go somewhere, you had to wait for the transportation to pass, then a taxi appeared. After taxis mushroomed, online vehicles such as Go-jek and Go-car appeared. In the past, people when they wanted to shave their heads simply came to traditional barbershops. The current era gives rise to a modern and practical barbershop industry (Wijayanti, 2017). Irianto in the work of Industry 4.0; The Challenges of Tomorrow (2017), calls the challenges of Industry 4.0 several things. First, industry readiness. Second, a trusted workforce. Third, the ease of socio-cultural arrangements. Fourth, diversification and job creation and industry 4.0

opportunities, namely ecosystem innovation, competitive industrial base, investment in technology and integration of Small and Medium Enterprises (SMEs) and entrepreneurship (Yahya, 2018).

The shift in teaching style shifts from teacher center to student center which can certainly increase students' interest in learning. The use of information and communication technology in learning becomes a positive impact learning innovation. Not only in terms of interest in learning but also in terms of learning outcomes. The use of various digital applications, interactive learning CDs, ebooks, websites, and other digital learning styles is a paperless alternative. Teachers do not need to print sheets of test questions for their students. Students can take an evaluation with various online applications such as edmodo and kahoot (Wijayanti, 2017).

From the explanation above, it can be concluded that the challenges of the Industrial Revolution 4.0 era are very complex. First, information technology security that targets education. Secondly, the reliability and stability of production machines. Thirdly, the lack of adequate skills. Fourth, the reluctance to change stakeholders. Fifth, the loss of many jobs due to automation. Sixth, stagnation in the use of technology, information, and communication. Seventh, uneven changes in curriculum, models, strategies, approaches and teachers in learning that strengthen new literacy. The development of the Industrial Revolution 4.0 era which is marked by the massive development of digital technology, artificial intelligence, big data, robotics, and others has become a joint project of all educational institutions to answer it. Although it cannot be on all aspects, at a minimum educational institutions focus on strengthening new literacy.

### **The Role of Teachers in the Era of the Industrial Revolution 4.0**

Responding to the challenges of the Industrial Revolution 4.0 is key for teachers. Times are changing fast, requiring innovation to learn to keep up. Teachers in this country need to be able to catch that signal as the times change faster. The model characteristics of Industry 4.0 are a combination of some of the latest technological developments such as physical cyber systems, information and communication technology, communication networks, big data, cloud computing, modeling, virtualization, simulation and equipment for easy human interaction with computers (Fauzan, 2018).

In the past, literacy only revolved around reading, writing, and numeracy, but in this era of the Industrial Revolution 4.0, everything is distorted. Teachers must be able to answer this with new literacy skills with aspects of data literacy, technological literacy, and literacy humanisme / SDM (Rajabdkk, 2018). Tetapi harapan di era 21st sangat cepat dengan perkembangan digital technology. That educational need is not the same as the 20th era. The 21st century or the era of the Industrial Revolution 4.0 requires human resources who have high competence, character, and literacy (Makin's, 2004). In addition to academic qualifications, teachers must meet teacher competencies.

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Information and Communication Technology (ICT) facilities in schools become a necessity so that school residents are integrated with the world of education outside of school (Mahdiansyah, 2018). The key to educational innovation is development. Teachers in the era of technological progress are very lame if they do not align their competencies. Ironic if teachers can't turn computers on, apply e-learning, digital literacy and designing ICT-based learning. Then it is necessary to revitalize with several approaches.

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