

Global Citizens Awareness through Digital Literacy in the Fourth Industrial Revolution: A Review of the Literature

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Abstract-This article aims to report on the current state of research on the various alternative solutions in increasing global citizen awareness by utilizing digital literacy as an ability to use digital media (Internet of things, big data, and robotical feature). This research used a critical study method by examining the literature and identifying the current trend related to digital literacy and global citizen. In all the 42 papers that were reviewed, the results showed that digital literacy is an important implication to collaborate and communicate with global digital networks that enable every individual to be aware of being an active and participatory citizen of world issues without losing identity.

Key words: *Global Citizen Awareness, Digital Literacy, The Fourth Industrial Revolution*

I. INTRODUCTION

The dynamics of people's lives in the industrial revolution era of 4.0 experienced a rapid transformation. However, the lack of preparedness and skill of the people in Indonesia as a developing country are a challenge to respond to the 4.0 industrial revolution in shaping awareness as a global citizen. There are several facts that some Indonesian citizens are less reliable in using or utilizing digital technology devices [1]. In addition to the weak mastery of English skills, which creates obstacles from some citizens in Indonesia in communicating and collaborating internationally. This results in an index of human resource development in Indonesia to be considered less than optimal for becoming a global citizen. The data that was recorded from the value of the Indonesian Human Development Index (HDI) for 2017 is 0.694, meaning that Indonesia occupies a state position in the medium category of human development or in other words, the country ranks 116 out of 189 countries in the world [20].

Several previous research programs have been implemented as an effort to increase global awareness. Cameron and David [3] state that the formation of global citizens can effectively use the practical approach to cosmopolitan ethics and the psychology of motivation. In contrast, Obby and Budimansyah [4] argued the values of local wisdom such as solidarity, empathy, mutual cooperation, and the commitment of participation in the public interest were indicators of global civic culture development in this modern life. Jooste [5] believes that global moral education in higher education containing the principles of justice, ethics, social responsibility, accessibility, and accountability strive to establish global citizenship in rich diversity. In addition, Boetto [6] mentioned that education for the preservation of the natural and social environment can create awareness of global citizens

While studies on the formation of global citizen awareness can be done effectively through cosmopolitan ethics, values of local wisdom, global moral education, and education for the preservation of the social and natural environment. It is also a study in the fourth industrial revolution era in shaping global citizens. Several previous studies on community involvement in the digital world formed global awareness that was found in several countries. Guillen [7] in Spain has taught teachers to have digital competence as the main goal of 21st century education in the global era. Additionally, in Australia Harris [8] revealed that the values embraced by global citizenship include a commitment to online communication processes as a global concern for humanity in the world. Then Livingstone [9] stated that learning about Information and Communication Technology (ICT) aims to keep abreast of the times in the world as a global citizen

There is a lot of literature about how to shape the awareness of global citizens in the era of industrial

revolution 4.0 from some developed countries but it is not yet found in developing countries like Indonesia which has many internet users. Therefore, this study contributes to enriching skills and soft skills through literacy because it is considered an important implication as a support for citizen competencies in the era of industrial revolution 4.0. This study aims to create potential aspects in shaping the awareness of global citizens in the era of fast connectivity (digital era). Digital literacy is an aspect that every digital user needs to have in this 4.0 industrial revolution, because each individual is not only capable of operating digital devices but also includes a variety of complex skills such as cognitive, motoric, sociological, and emotional ones that allow users to use effectively in the digital environment [10].

The approach to digital literacy in the term "digital literacy" enables the analysis of social practices that identify important points where effective learning is triggered in efficient social-technical learning systems. [11] The framework that underlies this study is digital literacy that does not only identify the amount of literacy associated with the use of digital technology which includes hardware and software used by individuals for educational, social and / or entertainment purposes at school and at home [10] but in this study we also want to inform how the benefits of digital literacy that can make citizens wise in using digital devices as an effort to establish a good and clever set of citizen characters [11,12]. Thus, extending the goal of forming the character of citizens through digital literacy can be used as an indicator in building awareness of global citizens who can interact, participate, communicate and collaborate across nations without losing the identity of their respective people.

II. METHOD

This article uses the literature review method by examining the literature and identifying the current trends related to the benefits of digital literacy in the era of industrial revolution 4.0 towards the formation of global citizen awareness. In achieving the desired objectives in this study, a comprehensive review of the literature was carried out, The review of the literature included journal articles, conference papers, edited volumes [13]. The relevant literature was identified and formulated with problems related to concepts, indicators, aspects, and digital implications of literacy and awareness of global citizens from the results downloaded and read carefully. Scientific databases were obtained as from:

- Science Direct
- Google Scholar
- Tandfonline.com
- Sagepub.com

The data that was collected from around 42 papers were reviewed. Each paper was understood, and identified by each category. Then the content related to digital literacy was verified as useful in the industrial

revolution era 4.0 into sub-categories. After that, the sub-categories were analyzed and classified into several supporting indicators of global citizen awareness in the era of industrial revolution 4.0

III. RESULT AND DISCUSSION

A. *Challenges and Opportunities for the Age of Industrial Revolution 4.0*

The emergence of the industrial revolutionary era 4.0 transformed various kinds of human life activities. The term 4.0 Industrial Revolution has become a global issue when it began in 2016 during The World Economic Forum (WEF) in a global discussion that stated there was a massive automation and connectivity based on artificial intelligence (AI), big data, robotics, and the Internet of Things (IoT) that contributed to increase productivity and industrial production [14]. This technological revolution will fundamentally change the way of life, methods of work, and patterns of interaction between humans in scale, scope, and complexity that was not thought of before [15]. Every country needs to respond to this transformation in an integrated and comprehensive manner [16]. This new era will require new skills and mindsets to harness the power of this technology and to understand its consequences [17]. This shows that the quality of human resources needs to be developed continuously to meet the competency standards of each individual in this era of digital revolution. However, not all countries can meet the competency standards needed in the era of digital revolution. Especially in developing countries such as Indonesia which has a large population and the inequality of education in Indonesia as a challenge in facing global competition.

Today the digital era needs to be faced with not only following, developing, and adopting the latest technology, but having the skills in processing the digital system creatively, formally and openly to change and continue to innovate as the most important thing is to [18]. The industrial age 4.0 also refers to new trends in gathering, and analyzing, massive data communication through an intense automation process. [17,19]. So it becomes a challenge to improve soft skills and skills in the digital realm in creating creativity and innovation on an ongoing basis. In addition, the current wave of technological innovation has to do with work and production which is exacerbated by expressions such as the Industrial revolution 4.0 digital capitalism rhetoric, narratives, and hopes that accompany today's definitions of changing capitalism is not new [20].

In addition to the challenges that exist in the 4.0 industrial revolution, there are opportunities that can be utilized. Not only does it lead to job reduction, but also provides an opportunity to increase global income levels and improve living standards, until now, most consumers have benefited largely from the Industrial Revolution 4.0 which has the opportunity to take part in the "new digital world" while using products and services which are technologically advanced [19,21]. However, in the future, technological developments will continue to transform the production process and supply

chain (supply chain) in terms of increasing productivity and significant efficiency. Opportunities in the industrial revolution 4.0 should be used properly by every individual, not to be left behind and manipulated by other nations as a result of our lack of competence in the digital world [22].

B. The Relationship of Digital Literacy with Global Insights

The analysis of digital literacy can be used as a method or tool that can be implemented by the community to get the best benefits in the era of industrial revolution 4.0. Literacy itself can be interpreted in general as a process of using reading, writing, and oral language to extract, construct, integrate, and criticize meaning through interaction and involvement with multimodal text in the context of socially situated practice [23]. This literacy process is used in the digital domain. The hope is that digital literacy can provide knowledge and information on how to use digital tools that are wise in responding to current world issues. Furthermore, the forms of that digital literacy measurement offer are policy makers which are the means to monitor the diffusion of digital skills needed [24].

In the era of advances in digital technology, it has transformed the way of life and communication in the order of the world community. Most educators assume that this new technology requires new skills to prepare students to still be able to live adapting to the era of 21st century skills, these skills include information skills, media and technology, also known as "digital literacy" [25]. A number of ways of conceptualizing digital literacy have been proposed in a series of four key areas including language skills, information processing, connections, and redesigning or paraphrasing skills [26]. Language skills are needed as an effort on how each individual can master the international language, namely English through understanding the features or codes that stand for digital tools that are common and known to the world community. Furthermore, information processing skills are the basic skills of how to filter information from the internet by thinking critically to find the truth of the information obtained [27]. The skill of establishing a connection is a skill to build networking in the digital world by respecting each other's background and culture. Finally, the skills of redesigning or paraphrasing are to take the ideas or creativities of other people with the applicable rules and avoid the name plagiarism.

Meanwhile there are eight key elements that characterize digital literacy, which are mutual understanding and respect for a culture, as well as to have cognitive digitalization, and a constructive, communicative, confident, creative, critical, and civic understanding (knowing how to use technology to increase civic engagement and social action) in the digital environment with a global scope [28]. Other categories in conceptualizing digital literacy are (a) innovation, (b) thinking critically and using quality information, (c) collaboration, (d) technology, ethics, and self-awareness, and (e) finding and gathering

information [29]. The understanding of digital literacy is further defined by The ALA Digital Literacy Task Force as the ability to use information and communication technology to find, evaluate, create and communicate information that requires technical and cognitive skills [30]. Some of the previous statements can be analyzed that each individual who uses digital literacy in using and applying digital devices indirectly positions ourselves as global citizens who are active and knowledgeable globally because they are accompanied by 21st century soft skills. have communication skills, collaboral, and critical thinking, creativity, technological literacy, and global awareness of world issues [31].

Furthermore, to ensure an understanding of the concept of digital literacy, there are three things that have emerged, including the challenges of critiquing the ideological concerns with having digital abilities without alienating the individual's personal affective response; (2) connecting collective social issues and educational inequalities to individual practices; and (3) cultivating a critical disposition in a context in which technical proficiency is prioritized [32]. It is a need to anticipate early in facing these challenges; First, there needs to be a longitudinal ethnographic study of the immersion of multilingual children in digital literacy practices to track in detail their understanding, skills, and knowledge that emerge throughout the domain. Such as a case studies as presented in this article, whereas offering valuable photographs, are not enough to develop the full knowledge of what children learn about literacy and multimodal communication in the digital age. Secondly, further research should focus on the intergenerational nature of multimodal communicative practices in which children are involved, given the importance of developing skills, knowledge, and affective orientation towards literacy. Thirdly, this study shows that it is possible to involve parents as active participants in collecting data about the experiences of their children at home [33].

Children from birth are already familiar with digital devices (digital native), and not necessarily are able to use them properly. The causes of digital natives to not be very good at using digital devices are due to a lack of digital literacy. Digital literacy should be used as an awareness, attitude and ability of individuals to use digital tools and facilities appropriately to identify, access, manage, integrate, evaluate, analyze and synthesize digital resources, build new knowledge, make media expressions, and

communicate with others , in the context of certain life situations, to enable constructive social action; and to reflect on this process [12,34]. While there are six skills that users must possess in facing cognitive challenges in the modern digital environment: a)

photovisual literacy is the ability to work effectively with a digital environment, such as a user interface, that uses graphic communication. (b) reproduction literacy is the ability to create authentic, meaningful works of art and writing by reproducing and manipulating digital text, visuals, and pre-existing audio pieces. (c) branching literacy is the ability to build knowledge by nonlinear

navigation through the domain of knowledge, such as in the Internet and other hyper-media environments. (d) information literacy is the ability to consume information critically and sort out wrong and biased information. (e) Socio-emotional literacy is the ability to communicate effectively in online communication platforms such as discussion groups and chat rooms. (f) real-time thinking skills are the ability to process and evaluate large volumes of information in real-time, as in computer games and chat rooms [22].

The benefits of digital literacy contribute to each individual adding extensive knowledge because it integrates with the internet which is not limited by space and time. Theoretically, digital literate individuals must be able to adapt to new technologies and develop quickly and take the new semiotic language easily when communication emerges [10] this new literacy that is always related to the Internet spreads to a growing population and as online services begin to sink many parts of people's daily lives, measures nuanced to the use of the Internet will be increasingly important for research on the social implications of information technology [35]. The internet has become an educational tool to working in the local community in order to work in a global community [8] so that each individual lives in a very complex and interconnected world, which is not flat, just, and open to all. In such a world, "the global citizenship" [36]. Furthermore, the impact of digital literacy to respond to the era of industrial revolution 4.0 was seen from its benefits to build global citizen awareness as presented in Table 1.

TABLE I. THE IMPACT OF DIGITAL LITERACY

The Impact of Digital Literacy	Target	Description
<i>Increased Hard Skills</i>	Citizen	Digital Literacy increases knowledge, understanding, and methods of using or operating digital tools progressively
<i>Enhanced Global Communication Skills</i>	Citizen	Digital Literacy makes every individual involved in the digital world to understand the language of the features of digital devices that generally use International languages. Indirectly improving English language skills for smooth global communication.
<i>Increased Soft Skills</i>	Citizen	Digital Literacy enhances the ability to build interaction or networking in order to, communicate well, think critically in receiving various information, and develop creativity in the competitive era of industrial revolution 4.0
<i>Moral Improvement</i>	Citizen	Digital literacy indirectly has a positive impact on individual morals such as raising awareness for responsibility, empathy, tolerance, caring for oneself, others, the surrounding environment and planet Earth through a wise attitude using digital devices in the global scope

IV. GLOBAL CITIZENS COMPETENCES

Digital literacy is considered as the right way to encourage awareness of global citizens through its indicators and components. The preparation of global citizens requires competencies that can support the role of every citizen in the interests of the world.

Globalization continues to grow, universities are challenged to modify policies and programs to reflect on the global realities that change through a process known as internationalization [37]. Inevitably nowadays every individual needs to adjust himself to be aware as a global citizen as well as the development of the times. Global citizen awareness is characterized by local, national, and international involvement; having awareness, information, and being educated about problems; demonstrating social and environmental responsibility; oppressed joint advocate [37,38]. Meanwhile the concept of global citizenship associated with terms such as cosmopolitanism, global thought, global awareness, world citizenship, has been used for decades in religious and secular discourses [39].

In having competency as a global citizen, education is needed to form the basis of being global citizens. Quoted from the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2015), it has identified the need for education to explore forms of education that enable students to overcome local and global challenges, as graduates who are socially responsible, critical and ethical thinkers, dispositions are consistent with world citizens. and liberal education [40]. An education for establishing global citizenship can be sustained by moral and transformative cosmopolitanism, liberal learning principles and metacognitive capacities desired by employers or recipients of work, and better education directed towards organizational and pedagogical strategies that encourage citizens to think ethically, critically and professionally to be ready to work [41]. Furthermore, global citizenship education aims to have a set of global citizen characters identified by information and exemplified through student self-reports about change, namely openness, tolerance, respect, and responsibility (self / others / planet) [42]. In the end the transformation of the curriculum for global citizenship education has aspects of empathy, broad global knowledge, literacy skills, concrete actions, and a sense of responsibility [3].

V. CONCLUSION

Digital literacy is an important implication to have in order to create an effective discussion in response to technological advances in the era of industrial revolution 4.0 (digital era). Digital literacy not only develops hardskills in using digital technology that always progresses and demands every citizen to keep up with their development, but also fosters softskills and morals for each individual. Ultimately digital literacy impacts on the ability of citizens to create global networking, active participation, and response to global issues as supporting competencies to form global citizens who are smart, competitive and good characters in the era of industrial revolution 4.0.

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