

YUVAL NOAH HARARI'S VIEW ON THE CHALLENGES OF 21st CENTURY EDUCATION

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ABSTRAK

Salah satu tujuan dari pendidikan formal adalah untuk memungkinkan orang untuk hidup atau bekerja sesuai dengan kebutuhan zaman mereka. Pembelajaran saat ini (khususnya Pendidikan Sejarah) di sekolah masih berfokus pada menghafal dan jauh dari produktif apalagi progresif. Yuval Noah Harari, seorang profesor di Departemen Sejarah Universitas Ibrani Yerusalem, yang buku triloginya menggambarkan peta dari tantangan, masalah, serta rekomendasi untuk pendidikan di abad ke-21 sehingga orang-orang abad ini dapat menjalani kehidupan mereka dengan baik. Penelitian ini adalah tinjauan kritis terhadap pemikiran Yuval Noah Harari tentang tantangan pendidikan abad ke-21. Tiga karya Harari yang monumental diperiksa dan dibandingkan secara kritis dengan karya-karya lain yang relevan. Makalah ini menyimpulkan bahwa ada tiga cara untuk menyelesaikan masalah pendidikan di abad ke-21. Pertama, dengan menghubungkan tiga periode; kedua, mendorong pemerintah untuk membuat kebijakan positif pada tiga isu paling penting (perang nuklir, krisis lingkungan, dan gangguan informasi dan teknologi); dan ketiga, mengundang dunia untuk berpartisipasi dalam memecahkan masalah global.

Kata kunci: Abad 21, Pendidikan, Tantangan

ABSTRACT

One of the aims of formal education is to enable people to live or to work accordingly to the needs of their era. Unfortunately, instead of being used as a tool of living, nowadays learning (particularly History Education) at schools still focuses on memorizing and is far from productive let alone progressive. Yuval Noah Harari, a professor in the History Department of the Hebrew University of Jerusalem, whose trilogy books describe maps out challenges, problems, as well as recommendations for education in the 21st Century so that people of the Century could live their lives properly. This research is a critical review of Yuval Noah Harari's thoughts about the challenges of 21st Century education. Three monumental Harari's works (*Sapiens*, *Homo Deus*, *21st Lessons*) were examined and critically compared with other relevant works. This paper concludes that there are three ways to resolve the problem of education in the 21st Century. First, by relating three periods (past, present, future); secondly, encouraging governments to make positive policies on the three most important issues and thirdly, inviting the world to participate in solving global problems.

Keywords: The 21st Century, Education, Challenges

INTRODUCTION

Human today is facing an unprecedented revolution in which all old stories collapse and no new stories emerge to replace them. As the question posed by Harari, “How can we prepare ourselves and our children for a world that is constantly transformed and offers radical uncertainty?” For example, for babies born today, then they will be thirty years old by 2050. If the world is fine, the baby will live around the year 2100, and may even become an active citizen in the 22nd century. The problem is what we need to teach the baby so he can survive in 2050 or 2100? And what skills need to be prepared so that they get jobs and understand the situation around them?¹

The pessimistic view of Harari is understandable because as expressed by observers, the combined impact of globalization, information technology, and biotechnology, including Artificial Intelligent (AI) has led to

phenomenal changes in the post-modern society, which have challenged every aspect of our modern lifestyle.

It is so different from the situation and conditions in the previous ten centuries where even though no one could predict the future correctly, they believed that the basic characteristic of society at that time was not to experience significant changes. Harari gave an example of the situation in China in 1018 where the Song Kingdom might collapse, the Khitans would invade from the North, and disaster might kill millions. These conditions were still imagined even though the year has changed to 1050 where the majority of people would still work as farmers and weavers, the rulers would still depend on humans to regulate forces and bureaucratic affairs, men would still dominate more, life expectancy would remain the same which was about forty years. So parents in 1018 taught their

¹ Yuval Noah Harari. (2018). *21 Lessons* (trans, Hans Algebra). Manado: CV Global Indo Kreatif, p.281.

children the same thing as natural, such as for wealthier parents taught their children how to make classic Confucius books, to write calligraphy, to fight horses, and to prepare girls to be a simple and obedient housewife. Meanwhile, poor parents taught their children how to grow rice or to weave silk.²

Beyond that, some have tried to explore these educational challenges and dealt with them. One of them was Prof. Ranbir Singh Malik. In his article, *Educational Challenges in the 21st Century and Sustainable Development*, he reveals that even though the world today is overwhelmed with globalization and the explosion of ICT and knowledge/information which affects every area of life, the world of education can be the solution. The method is by radically changing the ways of delivering education, especially in developing

countries. Today's education must equip individuals with cosmopolitan and cross-cultural understanding to enhance the capability of working in multicultural settings on group projects, and the capacity to think creatively and critically to the digital natives of today and tomorrow.³

Besides, there is John Joseph Lupinacci who discusses the challenges of 21st Century education, but his article focuses only on the issue of educational leadership.⁴ Then there is also Aleksandra Tluściak Deliowska whose article focuses more on technical and instrumental problems, especially related to teacher-student relations which she thinks need to be given great

² Yuval Noah Harari. (2018). *21 Lessons*, p.282.

³ Ranbir Singh Malik. "Educational Challenges in 21st Century and Sustainable Development" *Journal of Sustainable Development Education and Research*, Vol. 2, No. 1, 2018, pp.9-20.

⁴ Lupinacci, John Joseph. "Addressing 21st Century Challenges in Education: An Ecocritical Conceptual Framework toward an Ecotistical Leadership in Education" *Impacting Education: Journal on Transforming Professional Practice*, Vol. 2 (2017), pp. 20-27.

attention. However, her study does not detail.⁵

None of the studies mentioned above discuss education for 21st Century from a historical perspective, like Yuval Noah Harari's perspective. Even though Harari is a historian it does not mean that he has disconnected from the field of education. Harari's life is in the circle of the education system. Equipped with mastery over human history along with the twists and turns of their actions, Harari finally ventured to discuss 21st Century human problems. Even further, he also tried to explore the possibilities of future long-term human life, such as those reviewed in his book entitled *Homo Deus*.

On the other hand, because Harari's name is still relatively new

in the academic world, there aren't many people who have discussed it seriously. Existing studies just cite the contents of the book or review the books and throughout my search, there are no journals that discuss his thoughts specifically regarding the issue of education. So that it can be said that this article is very important to be used as a preliminary study and needs to be developed more deeply.⁶

The purpose of this article is to provide an overview of the challenges of education in the 21st Century based on the views of Yuval Noah Harari. These challenges are discussed and then several solutions are proposed. Because of Harari's analysis based on the global and macro perspectives, the interaction and interconnection between fields of

⁵ Deliowska, Aleksandra Tluściak. "About the School and the Student-Teacher Relationship in the 21st Century: Some Perspectives and Challenges: *Problems of Education in the 21st Century*, Vol. 76, No. 4, 2018, pp. 422-424.

⁶ I found the study of Harari's thoughts both from the Mardohar B.B. Simanjuntak's article. "Disposisi Religio-Strategis Skemata Algoritma Mark C. Taylor dan Yuval Noah Harari" *Melintas*,

Vol. 34, No. 1, 2018, pp. 1-34 and Allan McCay's "The Value of Consciousness and Free Will in a Technological Dystopia" *Journal of Evolution & Technology*, Vol 28 Issue 1 (Sept, 2018), pp. 18-30. There is also a Bibliography Review written by Tamas Pesuth. "Money in Harari's Historical Philosophical and Technological Approach" *Vintage* (Public Finance Quarterly), London, 2018, pp. 275-280.

science are difficult to avoid. Even though it focuses on the challenges of education, the analysis and discussion will touch the other relevant issues.

RESEARCH METHOD

This research is a critical review of Yuval Noah Harari's thoughts about the challenges of 21st century education. Three monumental Harari's works (*Sapiens*, *Homo Deus*, *21st Lessons*) were examined and critically compared with other relevant works.

RESULT AND DISCUSSION

A Very Brief Biography and Works

Yuval Noah Harari, a famous historian in the 21st Century, was born on February 24, 1976, in Haifa, a city in Israel which is located under the Carmel Hill and on the coast of the Mediterranean Sea. He received his Ph.D. from the University of Oxford (UK) in 2002 and is currently a lecturer at the Department of History, the Hebrew

University of Jerusalem.⁷ From 2003 to 2005 he pursued postdoctoral studies in history as a Yad Hanadiv Fellow.

Being gay and deciding to marry his husband, Itzic Yahav, in 2002 in Toronto, Canada, did not prevent him from becoming a great 21st century thinker and philosopher. He has several works in the field of world history, medieval history, and military history. Some of his works are *Renaissance Military Memoirs: War, History, and Identity, 1450-1600* (Woodbridge: Boydell & Brewer, 2004); *Special Operation in the Age of Chivalry, 1100-1550* (Woodbridge: Boydell & Brewer, 2007); *The Ultimate Experience: Battlefield Revelation and the Making of Modern War Culture, 1450-2000* (Houndmills: Palgrave-Macmillan, 2008); and three masterpiece books, *Sapiens: A Brief History of Humankind* (London: Harvill Secker, 2014), *Homo Deus: A Brief History of Tomorrow* (2016),

⁷ www.ynharari.com/about (Official website), accessed on June 10, 2019

21 Lessons for the 21st Century (London: Jonathan Cape, 2018) that had been widely sold throughout the world.⁸

Sapiens, the book that divides the phase of human history into three waves (cognitive, agricultural, and scientific revolutions), has become an international bestseller. By 2018, it had been sold over 11.5 Million copies and was translated into over 50 languages, including Indonesia. Besides it was a New York Times top 10 bestsellers and held positions #1-#3 on the Sunday Times' bestseller list for 96 consecutive weeks, with over 150

weeks in the top ten. This book even was recommended by many prominent figures like Mark Zuckerberg, Barack Obama, and Bill Gates. In 2018 he is announced by producer Ridley Scott and Oscar-winning Asif Kapadia that it will be we adapted into a Hollywood movie. Recently it won the 2019 'Academic Book of the Year' prize as part of the UK's Academic Book Trade Awards.⁹

In contrast to *Sapiens*, which focuses on discussing human history, although in the last chapter it touched on the future possibilities, in *Homo Deus* Harari wanted to illustrate the predictive

⁸ Ibid. See also Yuval Noah Harari. (2017). *Sapiens* (trans, Yanto Musthofa). Jakarta: Alfabeta, p. 513. He also wrote some articles such as The Military Role of the Frankish Turcopoles –a Reassessment, *Mediterranean Historical Review* 12 (1) (pp. 77-116, June 1997); Inter-Frontal Cooperation in the Fourteenth-Century Western European Invasion Campaigns in *War in History* 6 (4) (pp. 379-395, September 1999); Eyewitnessing in Accounts of the First Crusade, The Gesta Francorum and Other Contemporary Narratives, *Crusades* 3 (pp. 77-99, August 2004); Martial Illusions, War and Disillusionment in Twentieth and Renaissance Military Memoirs in *Journal of Military History* 69 (1) (pp. 43-72, January 2005); The Concept of Decisive Battles in World History in *Journal of World History*

18: 3 (pp. 251-266, 2007); Military Memoirs: A Historical Overview of the Genre from the Middle Ages to the Late Modern Era in *War in History* 14: 3 (pp. 289-309, 2007); Knowledge, Power and the Medieval Soldier, 1096-1550 in *In Laudem Hierosolymitani, Studies in Crusades and Medieval Culture in Honour of Benjamin Z. Kedar* (Ashgate, 2007); Combat Flow: Military, Political, and Ethical Dimensions of Subjective Well-Being in War in *Review of General Psychology* 12: 3 (September 2008); Armchair Coffee and Authority: Eye-Witnesses and Flesh-witnesses Speak about War, 1100-2000 in *The Journal of Military History* 74: 1 (gennaio, pp. 53-78, 2010).

⁹ Op cit.

steps that humans will take in the future, such as the search for happiness, the desire to immortality, and divinity.¹⁰ That is why the book is titled *Homo Deus* because humans today are making efforts to immortality through, at least, three ways: biological engineering (biotech), cyborg engineering, and non-organic engineering.¹¹ Only within two years, 5.5 Million copies of the book had been sold worldwide, and the same as *Sapiens* it was translated into over 50 languages. In 2017 it won Handelsblatt's German Economic Book Award for 'the most thoughtful and influential economic book of the year', and recently in 2019, it was recognized as the 'Wise Book of the Year' by Krakow's Jagiellonian University.¹²

We will not get comprehensive information if we only read the two books above. Therefore, *21 Lessons* are suitable as a compliment because this book

focuses on the biggest problems that are being faced by humans today. Within a few months, 2 Million copies of the book had been sold worldwide.¹³

Harari twice won the Polonsky for "Creativity and Originality", in 2009 and 2011. Then, in 2011 he won the Society for Military History's Moncado Award for outstanding articles in military history and the next year he was elected to the Young Israeli Academy of Sciences.

21st Century Education

Modern society recognizes that investment in education will have a long-term positive impact, contribute to the common good, increase national prosperity and support stable family, environmental and community conditions. To face challenges and survive, young people must equip themselves with a variety of information, knowledge, and adequate skills. At the same time,

¹⁰ Yuval Noah Harari. (2018). *Homo Deus* (trans, Yanto Musthofa). Jakarta: 2018, p. 23.

¹¹ Ibid, p. 49. See also Yuval Noah Harari (2017). *Sapiens*, p. 475.

¹² www.ynharari.com/about (Official website).

¹³ Ibid.

corporations and political leaders ask schools to equip students with 21st century skills. The authors in the book of *Education for Life and Work* reveal that these values are not new, but they already exist since old times. Because we are entering the era of digital technology advancement, people want very fast communication and information exchange.¹⁴

According to the member of NEA, 21st century competence is divided into three parts: cognitive, intrapersonal, and interpersonal. For cognitive domains, it includes cognitive processes and strategies, knowledge, and creativity. It also includes critical thinking, information literacy, reasoning, argumentation, and information. Then for the intrapersonal domain including intellectual openness, work ethic and conscientiousness, and positive core self-evaluation. It also includes flexibility, initiative,

appreciation for diversity, and metacognition. The last, interpersonal domain includes teamwork and collaboration, and leadership. It also includes communication, responsibility, and conflict resolution.¹⁵ Many experts summarize it into four competencies commonly said as 4C, namely critical thinking, communication, collaboration, and creativity.

Critical thinking

There are many definitions expressed by experts regarding critical thinking. But the NEA gives its outlines: reason effective, use system thinking, make judgment and decisions, and solve problems. Without loading these skills the learning process has not gone well. 21st century society is required to have these skills if they want to get the news/information, compare evidence, evaluate competing claims, and make sensible

¹⁴ See Pellegrino, James W & Hilton, Margaret L (editors). (2012). *Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century*. Washington: The National Academies Press, p. 1. This view is the

same as the author's thought of the National Education Association (NEA) in the module of "Preparing 21st Century Students for a Global Society: An Educator Guide to the Four Cs", p. 33.

¹⁵ Ibid, p. 4.

decisions. Likewise, to solve global problems.¹⁶

Critical thinking has strong relationships with the other three skills. Creativity is difficult to build without critical thinking. Besides that, it is also closely related to communication, especially when someone receives information. When he activates his critical thinking, he is asked to examine, analyze, interpret, and evaluate the information so that the possibility of obtaining invalid information is very small. Then, more urgently compared to the previous era, 21st century society is being faced with problems that are bigger, complicated, and complex so that it is impossible to resolve them independently. Therefore, critical thinking needs to be combined with collaboration and collaboration with others from various perspectives.¹⁷

Communication

Today someone who does not have good communication

skills will soon be left behind and isolated. Besides, in this globalization era which is also characterized by an abundance of information, someone who does not have communication skills will easily be consumed by false information and provoked. Moreover, in a world of service-based work that involves interaction with many people, the skill of communicating ideas—both verbally and in writing—listening, empathy, effective communication are very important to master. This skill is very closely related to collaboration. When working together in a team, in working on a project, for example, it is important to activate effective communication skills to avoid misperception.¹⁸

Collaboration

A question came out. Is there a pure work made by one person? Impossible. The road that we passed, the car we drive, the house we live in, the books we read, to the clothes we wear, and so on, cannot

¹⁶ Ibid, pp. 8-9.

¹⁷ Ibid, p. 9.

¹⁸ Compare with Pellegrino, James W & Hilton, Margaret L (editors). (2012). *Education for Life and Work*, p. 14.

be tangible without the work of many people. This collaboration is a necessity. But in the last decade, because of the flow of globalization and the rise of technology collaborative is increasingly needed.

Harari said that the superiority of Homo Sapiens from other animals is not from the individual level, but the level of collectivity. Humans control the planet because they are only animals that can cooperate both flexible and in very large numbers. There are animals like the social insects, the bees, the ants which can work on a large scale but they do not have flexibility. On the other hand, some animals are like the wool, the elephants, the dolphins, the chimpanzees, they can cooperate much more, but they can do it only on the small numbers because cooperation is based on intimate knowledge one of the other.¹⁹

Collaborative efforts not only create results that are more holistic

than individual efforts but also create richer and more diverse knowledge. Therefore, rather than schools emphasizing competition between students they are better off turning towards learning systems that emphasize effective collaboration.

Creativity

Creativity can be defined in a variety of ways but the NEA provides guidelines that must contain: think creatively, work creatively with others, and implement innovation. Daniel Pink, as quoted by the NEA in *Education for Live and Work*, said that the future belongs to people who have thought *out of the box*. This view was also expressed by Pandji Pragiwaksono, a comedian and influencer. Today, according to him, in each field there are experts. Then how can our work appear on the surface? He then suggested that the tips for success in the digital age are “a little different better than a little better” He gave

¹⁹ See “Why Human Run the World|Yuval Noah Harari” at YouTube

Account of TED (Published on July 24, 2015). Accessed on June 15, 2019.

an example, when all companies made black earplugs, for the first time in history, the iPod produced them in white. When everyone thought that the earplug cable was a nuisance the iPod decided to give it a white color instead to let it know that what was inside his pocket was an iPod. Starting from that day, people like to use earplugs.²⁰

Richard Watson on his Occasional Paper Series also revealed that human creativity along with the ability of empathy and making moral decisions would be at the top of any list of uniquely human characteristics. Interestingly for Watson creativity in the world of education can also be considered by considering old ideas that have been forgotten or perhaps have not been explored more deeply. This view is like in harmony with the legal maxim of

Ushul Fiqh: “preserve the old well and take the new best.”²¹

Harari's View on The Challenges of 21st Century Education

His views on the challenges of 21st Century human education are original and unique due to his understanding of history studies. His latest monumental work the *21 Lessons for the 21st Century* is also enriched by historical perspective, including in the issues of education. He always equips his theory with concrete examples which make the reader and the listener easy to absorb the information.

For Harari the main challenge of the 21st century education is that for the first time in history no human being will ever know the situation and condition of the world in the future due to the rapid changes mediated by technology, such as genetic, brain, and mind engineering, including

²⁰ Pellegrino, James W & Hilton, Margaret L (editors). (2012). *Education for Life and Work*, p. 24. See also “JuruBicaraJKT: Sedikit Lebih Beda, Lebih Baik Daripada Sedikit Lebih Baik” at YouTube Channel of Pandji Pragiwaksono

(Published on April 29, 2017). Accessed on June 15, 2019.

²¹ Watson, Richard. Occasional Paper Series On Education in the 21st Century. *Education: Future Frontiers*. (2017), p. 8.

other things that previously seemed eternal.²²

Governments, politicians, scientists, and education practitioners do not know what knowledge and skills need to be prepared by the field of education to anticipate the future. Before further discussion of the future, today graduates in superpower countries like the United States of America still cannot satisfy corporations. According to the Conference Board survey of entrepreneurs, as quoted by Boaz, that 70% of high school graduates did not have the skills the company needed, and 40% of the graduates did not have the basic skills in reading, writing, and mathematics needed for the job. Schools also do not produce workers who are ready to face global competition let alone for jobs in 2050 that will be very different from today.²³ The most important survival skill for the next

50 years is not what we think. New types of jobs will emerge where some old jobs or skills will no longer be needed. Those who have high-level skills might be able to get a job, but for those who were unlucky due to economic factors, the explosion of a technological revolution, or unfit psychological conditions, will struggle to get a job. Harari said:

“By 2050, ‘useless’ classes may appear not only because of lack of job or lack of relevant education but also because of insufficient mental stamina.”²⁴

Finally, it will also change the structure or basic pattern of human life. Harari argues that since ancient times human life was divided into two complementary phases: the learning period followed by the work period. If in the first phase humans will gather various information, develop various skills, compile the

²² Harari, Yuval Noah. (2018). *21 Lessons*, p.281. See also “Yuval Harari: ON How to Set Expectation: ON Purpose Podcast Ep.16” at YouTube Account of *Jay Shatty*. (Published on June 7, 2019). Accessed on June 14, 2019.

²³ Boaz, David. (2018). *Alam Pikiran Libertarian: Manifesto untuk Kebebasan*. (trans, Nanang Sunandar dkk). Tangerang Selatan: Indeks, pp. 327-328.

²⁴ Harari, *21 Lessons*, p. 36

worldview, and establish a stable identity, in the second phase they will depend on the information and skills they have gathered, both to make a living and to contribute to the wider community. Unfortunately, because of the rapid change and a longer life span, the above pattern can no longer apply to the world of the middle of the 21st century. Life will disintegrate and they will experience a discontinuity in periods of their lives. Furthermore, according to Harari, questions such as “who am I?” will be more important questions than in previous times.²⁵

These conditions are exacerbated by the education system today which still uses old ways, forming the human industrial era. Harari describes it with a large concrete building that was divided into several identical spaces. Each room is equipped with rows of tables and chairs. When the bell rings, each child goes to one of the

rooms that has been filled by his/her peers. Every hour one or some adults enter the room and start lecturing. They are paid for their actions either by the government or private. One of them explains the shape of the earth, while others tell about the human body, and so on.²⁶

Most of what children learned in school today will not be relevant in 2050. Many schools focus on cramming information.²⁷ This method is suitable for past generations but not for those born in the 21st Century. They have been overwhelmed by a large amount of information since they were born. With just a smartphone and internet quota, they can access information as widely as possible, even for free. It is not an impossible thing, just by searching Google all day they will get more information than what their teacher has. The problem is that the overwhelming information makes the students

²⁵ Ibid, p. 286.

²⁶ Ibid, p. 288. See also Boaz, David. (2018). *Alam Pikiran Libertarian*, p. 328.

²⁷ Ibid, p. 283

difficulty in choosing valid information which famously called “the post-truth era”.

Harari argues that there is no such thing as free information, everything has reciprocity. The cost is personal data of the user in the form of an algorithm called the Big Data which many corporations like Google, YouTube, Facebook, and Amazon are collecting. Through the algorithm, the corporations could control and manipulate users for their interests.²⁸

The other challenge of the education field mentioned by Harari is widespread in info-tech and biotech. The combination of both factors drives billions of people out of the job market. This is a threat to freedom and equality. It is because the Big Data algorithm can potentially create a digital dictatorship in which all forces are concentrated only in the hands of a handful of elites while most people will suffer not because of

exploitation, but worse than that, namely the irrelevance of cognitive ability.²⁹ Why does this happen? Because unlike in the past where humans competed with industrial machinery, today and in the future, they will compete with something they are almost impossible to defeat, that is, artificial intelligence (AI) that can in almost everything surpass human capabilities. Not in terms of gross physical abilities but the cognitive side.³⁰

Those who have been educated in formal education to master a branch of science or certain skills will soon be defeated by the abilities possessed by AI. Furthermore, Harari bravely argues that AI is now beginning to outperform jobs that require emotion or “intuition”, ranging from chefs, psychologists, bankers, motorists, to lawyers. According to him “intuition” does not come from something that is magical but it is a process of “pattern recognition” of

²⁸ Ibid, pp. 290-291.

²⁹ Ibid, p. Xii.

³⁰ Ibid, p. 22. See also “Yuval Harari: ON How to Set Expectation: ON

Purpose Podcast Ep.16” at YouTube Account of *Jay Shatty*. (Published on June 7, 2019). Accessed on June 14, 2019.

biochemical algorithms contained in the human body. Homo Sapiens, for example, does not have magical intuition about traffic, investment or negotiation but by recognizing repeated patterns they can try to avoid careless pedestrians, incompetent borrowers, and dishonest criminals. It is therefore not surprising that even good drivers, bankers and lawyers can still make mistakes. In contrast, AI that is equipped with the right sensors can do all of these capabilities far more accurately and reliably than humans. Brain scientists today are studying the amygdala and cerebellum that allow AI to defeat psychiatrists and human bodyguards by 2050.³¹

One more advantage of AI that surpasses humans, namely connectivity and updateability. If humans are individuals who are difficult to connect and are updated simultaneously, AI is a network that is interconnected with a single

algorithm so that it is easy to be updated.³²

For example, many drivers are unfamiliar with traffic rules that are constantly changing, and they often violate these regulations. Each vehicle is a separate entity when two vehicles approach the same intersection at the same time, the drivers may be able to miscommunicate, and eventually collide. In contrast to self-control cars, because each other has connectivity, it is less likely to cause miscommunication that makes them collide. Unfortunately today we do not know whether there is a third field of activity (beyond the physical and cognitive abilities) that humans can do.³³

The situation is the same as in the education field. Because educational instruments, especially teachers, are different individuals and are not interconnected, in fact, many teachers do not reach the standard. The situation is more difficult when the curriculum

³¹ Ibid, pp. 22-24.

³² Ibid, p. 24.

³³ Ibid, pp. 24-25.

changes constantly. The governments have to manually educate them with patience and perseverance because each teacher has different abilities and skills.

However, Harari's thesis regarding the defeat of some humans due to the impact of AI got a challenge from David Hodgson as discussed by Allan McCay. Hodgson rejects the thesis that the work system of human thought is only based on algorithms so that computer or AI can replace humans in the workplace. For Hodgson, aside from algorithmic thinking, humans have other reasoning called *plausible reasoning*. It takes place when humans are weighing incommensurables. For instance, when one is deciding whether to honor a promise to help a friend or to go for dinner with a person one finds attractive, the competing reasons are of a different kind (duty and desire) and thus are incommensurable. Afterward, he

argues that this capacity derives from our consciousness.³⁴

I partially agree with both Hodgson's and Harari's. For me, humans are unique and mysterious. Apart from having algorithmic thinking (pattern recognition) and plausible reasoning, I argue that humans have an intuition or "eyes of the heart". Through spiritual practices, humans can gain knowledge of *ḥudhûri*, which is knowledge by the present. The science of *ḥudhûri* is the opposite of the science of *ḥushûli* that is knowledge by correspondence. Unfortunately, Harari only recognizes the knowledge of *ḥushûli*. According to the science of *ḥudhûri* an object in front of us always has two kinds of objects, namely (1) subjective objects that "exist" and "present" in our souls. This is called "meaning" (*al-maknā*) (2) objective object which is outside our mind. This is called "form" (*al-shurah*). On the one hand, the science of *ḥushûli* is

³⁴ Allan McCay's. "The Value of Consciousness and Free Will in a Technological Dystopia" *Journal of*

Evolution & Technology, Vol 28 Issue 1 (Sept 2018), p. 24.

achieved based on “correspondence” between meaning and al-shurah which can produce wrong or correct understanding. On the contrary, the knowledge of *ḥudhûri* cannot be wrong because it always captures the object directly which is presented into one’s soul. The disadvantage, I do not know what kind of work in the 21st century uses the science of *ḥudhûri*.³⁵

Unlike the info-tech, the challenge of biotech is more about ethical issues. While stretching the development of biological engineering (biotech), cyborg engineering, and non-organic engineering, the education field has to immediately rethink the questions of ethics that should be embraced by students today and in the future. Is it true that the backs of mice are planted with “ears” from cow cartilage cells, or pigs that are grafted with genetic material from worms, and so on? Besides

that there is also the main agenda of scientists, namely achieving eternal life. As expressed by Ian Pearson, one of the 21st Century futurologists. In his book *You Tomorrow* he predicts that in the next few decades humans will be able to live eternally through digital breeding. Their bodies will be damaged and die but their minds can be maintained and moved to the android body.³⁶

The last educational challenge is the global threats— ecological crisis, war through weapons of mass destruction such as nuclear, and disruption of information and technology.³⁷

In *Homo Deus*, Harari argues that one of the greatest achievements of the modern era is the beginning of the disappearance of war. This is because there is a transition from a material-based economy (source of wealth) to a knowledge-based economy. Even if the jungle law will return, he

³⁵ Kartanegara, Mulyadhi. (2006). *Menyelami Lubuk Tasawuf*. Jakarta: Erlangga, pp. 131-132.

³⁶ Pearson, Ian. (2019). *You Tomorrow* (trans, Dria Soetomo). Jakarta: Renebook, p. 25.

³⁷ Harari, *21 Lessons*, pp. 123-132.

predicts a new type of battle—cyberwar. But this achievement has made humans careless, allowing certain people to play with fire, especially America and Russia who have recently started making new nuclear arms.³⁸

However, Harari was more concerned about the ecological crisis, something that barely received attention from politicians. The impact of aggressive use of technology and science in the name of progress while putting aside morality, the earth's resources are getting thinner, carbon dioxide emissions are overflowing, water quality is getting worse, and biodiversity continues to decrease at such a rapid rate. The survey shows that in the past decade there has been an increase in CO₂ emissions of 2.7% which, if ignored, according to observers, as quoted by Hashim Kamali and Harari, the

global average temperature will increase by more than 2° C. This situation will be disrupting agricultural production, increasing the risk of flooding, removing ice sheets, creating destructive storms and hurricanes, causing droughts, making most of the world uninhabitable, and sending hundreds of millions of refugees to find new homes.³⁹

Although the impact has been real and undeniable, the ecological crisis rarely gets global attention. At least this is due to two factors, namely selfishness and different priorities. According to Heywood, this is because what is considered by a country or group to be very beneficial in general is not always profitable at the individual level.⁴⁰ It is the same as Mohan Munasinghe said that many major countries have retreated in overcoming the problem of global

³⁸ Harari, *21 Lessons*, p. 124.

³⁹ Ibid, pp. 125-130. See also Kamali, Mohammad Hashim. (2015). *The Middle Path of Moderation in Islam*. Oxford: Oxford University Press, pp. 137-141; Harari. *Sapiens*, p. 417. See also Agung, Jiva. [https://www.quareta.com/post/krisis-](https://www.quareta.com/post/krisis-ekologis-dan-masa-depan-manusia)

[ekologis-dan-masa-depan-manusia](https://www.quareta.com/post/krisis-ekologis-dan-masa-depan-manusia).

Accessed on June 13, 2019.

⁴⁰ Heywood, Andrew. (2016). *Ideologi Politik: Sebuah Pengantar* (trans, Yudi Santoso). Yogyakarta: Pustaka Pelajar, Chapter 9, p. 463.

warming, especially for countries that are not directly affected.⁴¹

Some Solutions

Harari's analysis as we discussed above can be understood as a qualitative challenge because according to Deliowska in observing modern challenges we have to divide it into two lines. The first is more about the problem of the instrument and technical changes while the second is about capturing the qualitatively new cognitive and existential situation of modern people.⁴²

At least I found three solutions which are offered by Harari: (1) connecting three spaces of time (past, present, future), (2) encouraging the government to make positive policies regarding to the three biggest issues of the 21st Century, and (3) inviting the world to cooperate in solving global problems.

We will not find the first solution from his works explicitly

but it can be discovered through his approaching how to convey the arguments. Building education and civilization have to take into account the entire period so that it will produce a comprehensive education system. When discussing certain issues, including education, Harari always gives historical evidence but at the same time, he never forgets to look at the factual conditions. By combining the two he gets problem mapping with which he predicts the possibilities (not just one scenario) that will occur in the future.

Without observing the whole periods we will get disorientation and easily be led to opinions and short-term interests. For example, the media in the West today are very heralded threats and dangers of terrorism. Soon the deradicalization study is included in our curriculum. Even though every year victims of terrorism only consume around 20-30,000

⁴¹ Ibid. See also Kamali, *The Middle Path of Moderation*, p. 139.

⁴² Deliowska, Aleksandra Tluściak. "About the School and the Student-

Teacher Relationship in the 21st Century: Some Perspectives and Challenges: *Problems of Education in the 21st Century*, Vol. 76, No. 4, 2018, pp. 422.

thousand people while air pollution kills millions of people every year. In addition, a traffic accident kills millions of people every year. So does diabetes. Therefore, as Yusuf al-Qaradawi said, we have to make a priority scale (*fiqhul aulawiyyat*) in seeing and overcoming problems.⁴³

The second solution offered by Harari is political. One of the aims of formal education is to enable people to live or to work accordingly to the needs of their era. The problem is what happens when their knowledge, abilities, and skills are defeated by AI? Here Harari calls on developing a social and economic model guided by the principle of protecting humans rather than job. One model that can be used is Universal Basic Income (UBI) where the government taxes the billionaires and companies that control algorithms and robots. The money is then given to society to simply cover their basic needs.⁴⁴

⁴³ Harari, *21 Lessons*, pp. 171-182. See also *Homo Deus*, p. 2.

⁴⁴ Harari, *21 Lesson*, pp. 40-41

⁴⁵ Ikhsan, Muhammad. "Andai Universal Basic Income Diterapkan

Personally, Indonesian Finance Minister Sri Mulyani Indrawati acknowledged that UBI could be used as a strategic solution if applied globally. However, UBI is still a new concept that requires comprehensive testing to be effective in overcoming the problem for the long term. One aspect that has become a topic of discussion among many people is the budget issue that needs to be considered by the government.⁴⁵

Another idea is to expand the definition of work. An example is parenting. For a long time taking care of a child was considered an activity that was not "productive" then now there must be a kind of policy where a child caregiver (including his/her biological mother) is also considered a job so that he/she is worthy of an honorarium by the governments. The other alternative is the governments can implement Universal Basic Service (UBS).

Indonesia, Berapa Anggarannya?" at <https://www.bareksa.com> October 13, 2017. Accessed on June 13, 2019.

Instead of giving money for free like UBI, it is better for them to subsidize education, health care, free transportation, and so on.⁴⁶

Harari's anxiety has been responded to by Ian Pearson. According to him, when physical and intellectual work are delegated to AI, the more "soft" parts of our work, especially interpersonal work, will grow. Because of the economic focus shifting from Gross Domestic Product to a measure of the quality of life, jobs such as nursing, sales, marketing, entertainment, training, counseling, etc. will be needed. Therefore, According to him, the education system has to move from a "knowledge economy" to interpersonal skills.⁴⁷

The last solution offered is through *global cooperation*. The problem is faced by 21st Century society is no longer national or sectoral, but global. Therefore, when one group fights for

something while the other group does not, then the result will be nothing. Like the ancient villagers in the Nile River Valley who turned their allegiance from the local clan to the kingdom so that they could hold back the dangerous currents of the river, so are today's conditions where we are facing nuclear threats and the ecological crisis.

I interpret that Harari has a spirit of futurity, a concern about the future that implies that actions in the present must be assessed based on its impact on the survival of future generations. However, when we try to discuss the ecological crisis we need to be ready to dialect with various ecological schools starting from modernist ecology, the ecology of socialism, eco-anarchism, until eco-feminism.⁴⁸

The idea offered by Harari was also criticized by conventional moral thinkers who argued that it

⁴⁶ Harari, *21 Lesson*, p. 41

⁴⁷ Pearson, Ian. (2019). *You Tomorrow* (trans, Dria Soetomo). Jakarta: Renebook, p. 208.

⁴⁸ Heywood, Andrew. (2016). *Ideologi Politik: Sebuah Pengantar* (trans, Yudi Santoso). Yogyakarta: Pustaka Pelajar, Chapter 9, p. 438.

was very absurd to assign rights to humans today for the unborn people. Besides, when looking at a potentially unlimited number of future generations, the burden demanded by “futurists” is difficult to consider.⁴⁹

Nevertheless, I agree with Harari that regarding the ecological crisis, the education field has to open up and collaborate with various parties including activists and related organizations. One of the most concerned parties to the environment is Greenpeace, a non-governmental organization founded by environmentalists in 1971 who at the beginning of the movement were protesting nuclear tests conducted by the US government in Amchitka, Alaska. It is known as a nonviolent organization that acts with full awareness.⁵⁰

Greenpeace protests and put pressure on environmental destroyers. The members also design, conduct research, and campaign for concrete steps for the realization of a green and peaceful future for all levels of society. On its official website it describes several positive changes in which they are involved, such as recently after protesting and other lobbies, finally Samsung chose to produce renewable energy.⁵¹

The three solutions above will not be achieved without using a special tool, namely *critical thinking, flexibility, and knowing yourself*. In the era of information abundance, students no longer need information but an ability to understand it, distinguish what is important and what is not, distinguish between valid and hoax information. Above all, Harari

⁴⁹ Ibid, pp. 438-439.

⁵⁰ See <https://www.greenpeace.org>. Accessed on June 14, 2019. See also The Asia Foundation which made a module entitled *Pendidikan Karakter: dengan Pendekatan Living Values Education* (Published on 2019).

⁵¹ Lee, Insung. “You did it! Samsung choose renewable energy!” at

<https://www.greenpeace.org/international/story/17140/you-did-it-samsung-chooses-renewable-energy/> (Published on June 14, 2018). Accessed on June 14, 2019. See also Heywood, Andrew. (2016). *Ideologi Politik: Sebuah Pengantar* (trans, Yudi Santoso). Yogyakarta: Pustaka Pelajar, Chapter 9, p. 421.

stressed that combining this information into a comprehensive worldview is necessary.⁵²

Harari also suggests on teachers not to allow their students to fiddle with information autonomously for fear of being labeled authoritarian because when today's generation does not have a comprehensive worldview, the future of life will be run randomly. Deliowska agreed with Harari, stating that today's teachers need to help students shape their knowledge. According to her, the processes of self-organization, self-regulation, management, and decision-making become more complex and responsible, therefore they require scientific knowledge, critical and alternative thinking and courage in action.⁵³

Critical thinking is not enough, students of the 21st Century who are characterized by continuous change also have to

have very high flexibility, easy to learn new things and have strong emotional and mental balance. Unfortunately teaching these skills is far more difficult than teaching physics-mathematical formulas or medieval history. Moreover, teachers, in general, do not have the mental flexibility demanded by this era because they are products of the old education system.⁵⁴

This is his advice to the students: "Do not depend too much on adults. Most of them good but do not understand the world today." In Deliowska term it is called *self-education*.

Thus, who can help them? Harari does not recommend technology because it will easily cheat and hack them. Therefore the way to conquer this challenge is nothing more than running faster than technology (an algorithm, AI, Big Data, etc), do not bring a lot of external "items" (leave all

⁵² See Harari, *21 Lessons*, pp. 283-284.

⁵³ Deliowska, Aleksandra Tluściak. "About the School and the Student-Teacher Relationship in

the 21st Century: Some Perspectives and Challenges: *Problems of Education in the 21st Century*, Vol. 76, No. 4, 2018, pp. 423.

⁵⁴ Harari, *21 Lessons*, pp. 288.

illusions), and know yourself, an idiom suggested by wise men since thousands of years ago. Today the suggestion is far more important, urgent, and applicable than in previous times.⁵⁵

CONCLUSION

As a historian who is interested in actual and future issues, Harari tries to explore some of the educational challenges that will be faced by 21st Century society: (1) the difficulty of preparing students' future because of the rapid changes (2) the old education system that produces irrelevant skills (3) the speed of info-tech and biotech progress (4) the three global problems.

First and third points are constructed on the understanding that the advances in biotech and info-tech will make people defeated by AI in the job place. This happens when AI has a process of "pattern recognition" (by an algorithm) that is superior to humans. However, this thesis is not appropriate

because according to Hodgson the job place does not only use algorithmic systems but also *plausible reasoning*. It takes place when humans are weighing incommensurables. Likewise with Ian Pearson. He gives the good news that in the future more "smooth" jobs (interpersonal skills) will emerge. Therefore, according to him, the education system has to move from a "knowledge economy" to interpersonal skills.

Based on those challenges above, Harari gives some solutions: (1) by relating three periods (past, present, future); (2) encouraging governments to make positive policies on the three most important issues (nuclear war, environmental crisis, and the disruption of information and technology); and (3) inviting the world to participate in solving global problems. The three solutions will not be achieved without using a special tool, namely

⁵⁵ Ibid, pp. 289-290. Bandingkan dengan *Sapiens*, pp. 466-471.

critical thinking, flexibility, and knowing yourself.

I end the article with one important reflective suggestion. Similar to what Harari says, today's education needs to facilitate students to know themselves so that they have a complete worldview. The questions like "Who am I?", "Why am I born?", and "What is the purpose of my life?" need to be used as the main guide.

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