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Secularisation of Muslim Students: A Freirean Perspective on Biological Evolution Teaching in Islamic Schools

Ahmad Naharuddin Ramadhan*

Marzuki**

Heru Nurcahyo***

Bustami Subhan****

Abstract: The teaching of evolution has long been debated in the fields of science, education, and theology. This controversy raises many problems, especially when the national curriculum includes it as the material to be taught in religious (Islamic) schools. This study aims to examine Paulo Freire's critical education paradigm and its significance and relevance for criticising the teaching of evolution. This study used a qualitative-descriptive approach, with a library research. The data were obtained from Freire's books as primary sources and other related books and articles as secondary sources. The study found 6 key ideas of Freire that are relevant to critique on the teaching of evolution, namely: (1) the inseparability of education from political content, (2) the displacement of the values and culture of the oppressed through education,

* PhD Candidate in Educational Studies with Biology Education Concentration, Graduate School, Universitas Negeri Yogyakarta, 55281 Yogyakarta, Indonesia. Email: lenterasunnah@gmail.com (Corresponding Author)

** Professor, Department of Citizenship Education and Law, Faculty of Social Sciences, Universitas Negeri Yogyakarta, 55281 Yogyakarta, Indonesia. Email: marzuki@uny.ac.id

*** Associate Professor, Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Negeri Yogyakarta, 55281 Yogyakarta, Indonesia. Email: h.nurcahyo@uny.ac.id

**** Professor, Department of English Education, Faculty of Teacher Training and Education, Universitas Ahmad Dahlan, 55191 Yogyakarta, Indonesia. Email: bustamisubhanuad@gmail.com

(3) the neutrality of science, (4) three categories of human consciousness, (5) the concept of alienation, and (6) critical literacy programs.

Keywords: evolution, critical paradigm, Paulo Freire, Islamic education, religious school

Abstrak: Pengajaran evolusi merupakan topik yang menjadi perdebatan panjang baik dalam bidang sains, pendidikan, maupun teologi. Hal ini menimbulkan banyak problem khususnya apabila kurikulum nasional juga mewajibkan pengajarannya di sekolah-sekolah berbasis agama (Islam). Studi ini bertujuan untuk mengkaji paradigma pendidikan kritis Paulo Freire serta signifikansi dan relevansinya untuk mengkritisi pengajaran evolusi tersebut. Dalam studi ini digunakan pendekatan kualitatif-deskriptif, dengan jenis *library research*. Data diperoleh dari sumber primer yang terdiri dari buku-buku karya Freire dan sumber sekunder dari artikel-artikel ilmiah dan buku-buku lain yang terkait. Hasil penelitian menemukan 6 ide pokok Freire yang relevan dengan kritik atas pengajaran evolusi, yakni: (1) tidak terpisahnya pendidikan dengan muatan politik, (2) tergusurnya nilai-nilai dan budaya pihak yang tertindas melalui pendidikan, (3) ketidaknetralan sains, (4) tiga penggolongan kesadaran manusia, (5) konsep tentang alienasi, dan (6) program literasi kritis.

Kata Kunci: evolusi, paradigma kritis, Paulo Freire, pendidikan Islam, sekolah agama

Introduction

Indonesia contains the largest Muslim population of all countries in the world, amounted to 207,176,162 based on the 2010 Population Census of the Central Statistics Agency (BPS). The large population of the Muslim community has an impact on various aspects of social, national and state life, which includes ideology; politics; socio-culture; law; and education.

The history of education in Indonesia is inseparable from the movement of Islamic education in educating the nation's life. Thus far, Muslims have played a remarkable role in advancing the field of education and increasing public knowledge. This role ranges from building the global network of science in the archipelago, the establishment of Islamic boarding schools, to the establishment of formal schools, which constantly flourish in this modern times. These Islamic educational

institutions, in its essence, serve as manifestation of the Muslim ideals to preserve, internalise, and transform Islamic values to the nation's future generations, especially in the current era of disruption, which has brought various negative impacts, especially moral and spiritual degradation (Mierrina, 2019; Nudin, 2020; Tafonao, 2018). Amid the current moral crisis, and at a time when general education is embattled with the need to improve students' character and morals, religious educational institutions should constantly be at the forefront in creating a generation that is intelligent, faithful, devoted to God, and have noble characters (Alawiyah, 2014).

Although the religious education institutions have been projected to serve as an educational institution for Muslim students with non-secular nature, several studies have reported the insignificant difference between the learning in madrasas and religious schools—especially in terms of general sciences, including natural science—and the learning in general schools. This fact is evidenced by Hartono (2012), who revealed that the learning in madrasas still adheres to Western secular sciences that are not in line with the worldview of Islam. Western science conveys civilisation materials on positivism, materialism, and the belief about the death of God, which is still mainly taught in many madrasas in Indonesia. Some other studies stated that there has been a considerable dichotomy between the materials on science and those on religious sciences in madrasas, especially in public schools. Science teachers usually prevent their students from associating theories or explanations of science with those of religion on the grounds that both have different explanatory domains (Kholifah, 2018; Sabda, 2009; Supa'at, 2007).

This condition may lead to the adverse impact on students' faith, especially on matters related to scientific explanations that are in direct conflict with religious teachings. According to constructivism learning theory, in this case, student construction of knowledge regarding religious teachings and beliefs is shaken due to inconsistent information, which cannot be integrated with the cognitive structures or prior knowledge schemes (Ayuningrumi et al., 2016; Mulyani et al., 2012). Some experts even argued that secularisation through education is due to the exposure of students at schools to scientific explanations that are incompatible with religious beliefs coupled with the labelling as "the scientific explanation and is based on empirical evidence." Consequently, this condition leads to inferiority in explanation of religion, and thus many

“educated” group started to lose faith in religion (Becker et al., 2017; McCleary & Barro, 2018; see also Harrison, 2017).

The teaching of evolution has long been part of this debate. Evolution is a problematic and dilemmatic material to be taught to the religious Indonesian community. The evolutionist view of the origin of life as well as the origins of humans has clearly taken a position against religious belief in general. Thus far, there has been a constant debate over the discussion of evolution and regarding its teaching at schools (Fraser et al., 2011; Staver, 2015; Winslow et al., 2011).

One of the useful paradigms to explore the above problems is the critical education paradigm, brought about mainly by one of its important thinkers Paulo Freire (1921-1997). Freire’s views have inspired many critical studies about oppression and hegemony in the education system. However, as far as is explored, the use of the Freirean perspective to highlight the oppressions behind the study of the natural sciences is rare, including the teaching of evolution discussed in this study. As Sardar & Von Loon (2012) stated, science has been the pillar of the sacred totem that is the guardian of secular Western culture, and therefore, there should be no claim against science. Because science is the primary support for Western secularity, criticism of problematic things in modern science, such as the theory of evolution, is very important as an opening key to releasing the influence of the Western worldview on other sciences based on it. This study aims to present a critique based on Freirean perspective on the teaching of evolution.

Literature Review

Since this study aims to criticise the teaching of evolution in religious schools from a Freirean perspective, it is necessary to provide a literature review here to provide important insights related to the potential of relevant key theories as the basis for our critique.

Secularism and Secularisation through Education

Historically, the term secularism refers to the separation between the state and religious authorities, although this definition is considered too reductive. In its essence, secularism is more than just separating the civil state from religious authorities (Stambach et al., 2011). The term secularism refers to a system of understanding that puts forward materialism, rejects the existence of other life outside the world, and

seeks to escape all forms of belief and religious rules (Jamaluddin, 2013; Majid, 2008). In this connection, secularisation can historically be defined as a shift in individuals, objects, and meanings from religious nuances to more general and ordinary nuances. In a broad sense, the term secularisation refers to the decline of religious institutions, the decrease of belief, and the weakening religious practices in society (Casanova, 2001). Secularisation can also be interpreted as a process of becoming a secular person and embracing secularism, which is mundane and frees oneself from religious rules or beliefs (Hadi, 2016).

Secularism first emerged in the West, as history notes, in particular during the Renaissance period. The establishment of Western civilisation and science as the centre has triggered the introduction of the Western worldview in education and its propagation to other countries, as was confirmed by Kuntowijoyo (2008). He said that principally, the goal of the Renaissance was to liberate mankind from the myths of West-Greece, which then gave birth to a scientific revolution. However, the scientific revolution also caused new problems. The spirit to break free from ancient mythology turned out to have an impact on religion agnosticism, and in turn gave rise to secularism. Meanwhile, the scientific revolution in a non-religious and even anti-religious spirit has resulted in the notion that science is inherently value free. This reflection of Western culture and ideals eventually spread throughout the world, including Indonesia. Many thinkers articulated that the progress of culture and science could only take place were we able to free ourselves from the confines of religion (Kuntowijoyo, 2008).

There have been many studies to prove the thesis regarding secularisation through education. Some evidences pinpoint that the higher the level of education taken by an individual, the lesser his religiosity level (Becker et al., 2017; Cesur & Mocan, 2018; Dilmaghani, 2019; Hungerman, 2014; Masuda & Yudhistira, 2020; McCleary & Barro, 2018; Mocan & Pogorelova, 2017). The negative impact of education on religiosity, among others, is caused by the existence of a hidden curriculum (See various definitions of the hidden curriculum in Margolis, 2001). In this context, the hidden curriculum refers to the Western ideologies based on rationality that is in direct conflict with religious beliefs; such as Darwinism, Freudism, existentialism, atheism, and materialism which have undeniably infiltrated the sciences, social sciences, arts and humanities adopted from the West. The Western

scientific hegemony in the field of education is one of the ways that helps to propagate and disseminate the hidden curriculum globally. These ideas are particularly transmitted through schools and colleges that inconsiderately adopt Western-style secular education without proper sorting and filtering. The other way is through power exerted by the Western colonial countries who brought these ideas to their colonies. The third method is through student exchange programmes, by way of sending students and providing scholarships abroad. The fourth method is through political movements or intelligence operations (Efendy, 2015; Hadi, 2016; Jamaluddin, 2013).

The Teaching of the Evolution and the Non-Neutrality of Western Science

Biologists agree that evolution is a core theme in biology and has even become a central unifying theme in science (Kim, 2016; NSTA, 2013; Campbell et al., 2011). Theodosius Dobzhansky (1900-1975), one of the founders of the modern theory of evolution, even said that there is no meaningful discussion in biology without being illuminated by the light of evolution (Dobzhansky, 1973). The idea of evolution is considered capable of connecting so many observations about the living world, especially regarding the extraordinary diversity of organisms. Along with this diversity, many characteristics are found in common. From this unity amid diversity, the idea of evolution emerged, namely that the organisms living on earth today are modified descendants of a common ancestor. The similarity of characteristics between existing organisms then gave birth to the idea that these organisms are descended from a common ancestor. On the other hand, the differences that make each organism under its environment are the basis for thinking about evolutionary adaptations that make individuals within a species have variations in the details of characters that are shared.

Furthermore, the environment will choose individuals with character shapes that are more suited to the environment. These individuals will be more competitive in obtaining resources, have a longer chance of living, and produce offspring by passing on their adaptive characteristics. This process is known as natural selection (Campbell et al., 2011; Starr et al., 2016).

The idea of a common ancestor of living things raises the curiosity for academics to reconstruct the story of the origin of species, including

the story of human evolution. The emergence of interest in the story of human evolution cannot be separated from human curiosity about himself, which is as old as human existence itself. For example, it has been a philosophical question for a long time, namely: What and who is a human being, where do humans come from, and where in the end is human life? (Priyoyuwono, 2008). Included in this philosophical question is how the origin of life was formed? On this basis, Darwin himself called it the “mystery of mysteries” (Darwin, 1871). To answer this question, Darwin published his work *On the Origin of Species* which describes his view of the emergence of the many species that exist today, descended from ancestral species that differed in character from the species we see today. The idea of common descent, according to Darwin, is caused by critical biological changes (modifications) little by little over a very long time.

Darwin viewed the history of life as a tree with one common trunk, which then branched off into the youngest branches. In other words, existing organisms are related through descent from a common ancestor. The closer the kinship in the evolutionary tree, the more similar the characteristics (Campbell et al., 2011). When it is traced back, the form of the ancestor organism will be more straightforward. Miller-Urey then connected this organic evolution with his idea of neo-abiogenesis. From the results of his experiments (1953), he concluded that life on the primordial earth could have occurred by chance from inorganic substances (hydrogen, methane, ammonia, and water). Due to heat stimulation, cosmic ray radiation, and energy originating from lightning that existed on the earth’s surface in the past, these inorganic substances then form simple organic compounds that accumulate in the waters in the form of primordial soup. These simple organic compounds will continue to evolve (chemical evolution) to create more complex compounds, followed by organic molecules that make up living materials (Suhardi, 2007).

The above explanation proves that the origin of species, including humans and all life on earth, is a central theme in the discussion of evolution. Therefore, NSTA states that the theory of evolution raises awareness that nature has its history and that changes over time have and will continue to occur. This change even happens in life and more broadly on planet earth, stars, and galaxies, where what we see today is

different from conditions in the past (cosmic evolution) (NSTA, 2013; see also Alassiri, 2020).

Sometimes misconceptions occur when concepts in other branches of biology are used to explain how evolutionary mechanisms arise, such as mutations. Mutations are a discussion in genetics and are not part of the theory of evolution (Suryo, 2011). However, mutations explain how the evolutionary mechanism occurs because they are considered the initial source of new alleles that allow the emergence of unique beneficial traits (Martincová et al., 2022). Because of the misconception about mutations, the theory of evolution is often blurred with the scientific facts about viral mutations and antibiotic resistance in bacteria (Mantelas & Mavrikaki, 2020). So, disagreement with the theory of evolution is considered equivalent to a rejection of scientific facts. In this regard, Bakar (2020) has also made scientific criticisms of Pervez Hoodbhoy, linking Darwin's theory of evolution with the coronavirus. Hoodbhoy claims that the idea of evolution was the key to solving the mystery of the Covid-19 outbreak and successfully discovering a coronavirus vaccine.

In addition, the explanation above also proves that the current structure of modern biological science—with evolution as its paradigm or framework—does not provide room for a hypothesis about God. Starr et al. (2016) stated, “science only cares about what can be observed”. The narratives presented in most biology textbooks contradict science and religion, asserting that scientific discoveries about the evolution of living things are scientific explanations. On the other side, creation is merely a traditional belief system whose descriptions are no longer relevant to what scientists have discovered (BSCS, 2006; Kardong, 2008; Starr et al., 2016; Campbell et al., 2011). This problem was confirmed by many people from among the scientists themselves. Fred Hoyle states that biologists have forced themselves to conclude that life could have occurred randomly. However, this position is refuted by recent discoveries that the enormous complexity of life is too complex to have happened by chance. However, the structure of biological science is not open to questions to prevent the return of religion as in the medieval era (Hoyle, 1984). Elisabet Sahtouris stated that modern science likens nature to a “machine.” The universe becomes a closed mechanical system that works according to fixed mechanical laws, without divine intervention or other supernatural things that exist “outside nature” and

is blind or undirected. In modern science, this universe was not created by God. Still, it was merely an accidental arrangement into a universe consisting of matter, which is not alive, has no meaning, and has no purpose (Sahtouris, 2013).

Indeed, it cannot be denied that there are some figures and scientists among Muslims themselves who accept evolution and try to reconcile it with the information in the Qur'ān through a middle way, namely theistic evolution. These “half-hearted” groups seem to have fulfilled what was stated in the Qur'ān: “They are neither of you nor of them” (Qur'ān, 58:14). Many of their opinions are not following the principles in the theory of evolution itself. They also do not receive support from the Qur'ān, nor are they following the consensus of the previous scholars (the *Salaf*). One of the clear examples is that although the theistic evolutionists accept that the evolutionary process is God's way of making the various living things that exist today, they still believe that human evolution has now reached its peak. This position is to reconcile with the description of the scriptures that humans are given the mandate as guardians of this earth and carry out the task of worshipping God. However, the principle of chance in evolution itself does not support their beliefs. The process of change is unpredictable, and randomness is vital in determining how things evolved. Therefore, Carl Sagan (1934-1996) once said that we are the product of a 4.5-billion year-long process of biological evolution that happened by chance and slowly. There is no reason to think that the evolutionary process has now stopped. Man is a transitional animal; he is not the climax of creation (Sagan, 2000). In addition, the statements in the Qur'ān, with their overall unified context, do not provide support for what they believe.

For this reason, many Muslim theologians take a firm position against accepting the theory of evolution. Sheikh Muhammad Mutawalli Ash-Sya'rawi stated that the theory of evolution is heretical and misleading and must be refuted (Asy-Sya'rawi, 1992, p. 105). He also said that Darwin's theory was a form of lying about God regarding the creation of man and could cause doubts in the belief in the existence of God (Asy-Sya'rawi, 1978, p. 24).

Some other Muslims try to use the framework popularised by Stephen Jay Gould and others called the Non-Overlapping Magisterium (NOMA). Religion and science are allowed to operate in their

scientific domains (Gould, 1999; Barbour, 1990). The reason is that the goals of religion and science are different. Religion is a source of theological, moral and spiritual values, while science is a source of innovation, discovery and improvement of the quality of human life. Nobel laureate Richard Feynman agrees with this view by stating that religion is a culture of faith while scientific culture is a culture of doubt (Allassiri, 2020). When examined in more depth, this view can be said to be a tricky approach. Acts as if condescending but intends to elevate science's position above religion. Religious culture is often identified with "faith", "for we live by faith, not by sight" (2 Corinthians 5:7), but for the pejorative meaning that religious explanations are rigid, dogmatic, irrational, and have no relevance at all once with the existing reality. Meanwhile, scientific culture is identified with "doubt" in an ameliorative sense, which is open, dynamic, rational, following facts and supported by scientific evidence. Allowing religion and science to run in their domains is precisely the cause of the shock of belief which further weakens a person's confidence in his religion (Abbas, 1983).

The theory of evolution clearly does not provide any room for the existence of Adam and Eve as the first humans as believed and mentioned in the holy books of Islam, Judaism and Christianity (Dawkins, 2012). This fact denotes that the teaching of evolution has offered another truth, which contradicts the teachings of scripture. Students who receive this teaching will undoubtedly choose one of the two, be it religion or science, because it is impossible for having the values of both truths, which contradicts one another. This is where the shock of belief can occur. Dennett's (1995) statement reinforces the possibility of a shock of thought, which likens the theory of evolution to a universal acid, a corrosive liquid that destroys anything it hits. Darwin's theory of evolution is analogous to the universal acid, which can undermine other concepts that he thinks to belong to the bygone pre-scientific era. Such outdated ideas, according to Dennett, include belief in God, value, meaning, purpose, culture, morality and so on from basic things that have been highly valued by humanity for a long time (Dennett, 1995).

Paulo Freire's Critical Education Paradigm

Paulo Freire was a philosopher who questioned the occurring dehumanisation through the current education. Dehumanisation is the removal of human dignity, where the nature of the individual as a

human being is disrespected, devalued due to injustice, exploitation, hegemony, coercion and oppression exercised by the oppressor through an unjust system. Schools have become a means of reproducing oppression, perpetuating injustice, and a “factory” to produce “robots” that only obey the controllers. The occurring practice of education is more inclined to a dissemination of doctrine or a hegemonic tool for the ruling group or the elite. Students are always drilled and trained to consent submission (Abdillah, 2017; Yaqin, 2015).

Freire sharply criticises what he calls banking education, where the teacher serves as the customer and the student is treated as a money safe. In this case, knowledge is positioned as money that is placed in the safe. The materials being taught shut down students’ critical thinking, and they become a burden for the students instead. They turn students into mechanical machines since they do not provide students with opportunities to develop and give opinions according to their point of view. Educational practice is only understood as a means of indoctrination of knowledge, stopping critical thinking processes, freezing creative power, and shaping students to become people who are easy to believe (magical awareness). The school reflects the interests of the colonisers, and as such, the aspirations and needs of those colonised (students) are usually ignored. Colonial groups usually indoctrinate values and shift the culture of the colonised in order to assert their superiority. This is similar to what we encountered in the colonial education system, where colonial people were alienated from their original culture (Ayudha, 2016; Bahri, 2019; Robikhah, 2018).

To Freire, education is inseparable from politics in a broad sense. Education can be a means of hegemonic awareness that is either positive or negative (Fakih, 2002). In terms of a negative position, education becomes a significant hallucinating tool. In other words, education in this position is able to trick the individuals involved in it, to be lulled by the offers and values carried in it. This then will further drown the awareness of students to remain in the lies and incitement contained in the values and ideological campaigns that are exhaled through education. At this stage, education manifests itself as a means of oppression, working by becoming a means of conquering consciousness. In this position, conquest is carried out by means of a mechanism of mythicising the world, which aims to present a false world to the minds of individuals who are undergoing the learning process (Freire,

2011). This process then runs by providing subtle persuasion so that individuals who enter education are lulled into accepting the myth of propaganda (Fuad, 2003). At that time, there were changes in the views and knowledge of students, which were basically different from those before learning. Their views were bent so that they were no longer the same as what they previously understood and knew. Furthermore, the process of bending knowledge, as well as mythicising and evaluating, is a mechanism that is taken to perpetuate the situation of oppression and maintain the status quo. These processes are presented in order to carry out a cultural invasion (Freire, 2011). Cultural invasion is a continuation of the process of oppression and the process of alienation. Through cultural invasion, the awareness of each student is lost or negated by the awareness formed by the views of educators who are the arms of the powerful oppressors. This condition is increasingly drowning students in a slumped position. They lose their critical awareness so they can no longer see that something is wrong. Furthermore, they also experience an alienated condition, as they become alienated from themselves, or alienated from the world and environmental conditions that they really want (Datunsolang, 2018; Freire, 1984).

From 1964 to 1970, Freire worked in Chile to carry out literacy programs. His work was considered a successful literacy activity since he not only succeeded in eliminating illiteracy, but also raised critical awareness in the participants. From this, the critical literacy tradition was born. Critical literacy is defined as a person's ability to develop literacy skills, be it reading or writing, in order to raise awareness of the reality of social inequality as a manifestation of abuse of power, oppression, or marginalisation. Thus, Freire's critical literacy is not only cognitive (namely being able to read and write), but also involves awareness and experience and the most important thing is to give birth to emancipatory desires (Freire, 2011; Lee, 2011). Thus, in line with his pedagogical concept, Freire's critical literacy is intended to help those who are marginalised to reveal the hegemony of power and change the situation, or in Giroux terms, "is more than just understanding; it is also about the possibility of self-determination, individual freedom and social agents" (Giroux, 2004).

His success in this critical literacy program gave birth to Freire's idea of liberating education. He thought about how learning can shape the awareness of oppressed individuals and communities to gain freedom

and equality. Freire classified human consciousness into three. The first is magical consciousness, which is the level of consciousness that is unable to know the relationship between one factor and another. For example, poor people are unable to see the link between their poverty and the political and cultural system. People who are still in the magical level of consciousness are trapped in the myth of natural inferiority. Hence, instead of fighting or changing the reality in which they live, they basically adjust to the existing reality. The educational process that uses this logic does not provide the analytical ability to identify the links between systems and structures to community problems. Students dogmatically receive the “truth” from the teacher, without any mechanism to further understand the “meaning” of the ideology that is behind every conception of public life. The second is naive consciousness. This awareness is experienced by those who have seen and understood the causes of chaos in their lives, but do not have the awareness to rise up and challenge or at least try to fight for their rights. People who are in this naive awareness are apathetic, always looking for something safe, either out of fear or because they are unable to organise themselves to become a force for change. The third is critical consciousness. At this level, people are able to reflect and see the causal relationship, refuse to become perpetrators of the oppressive status quo, and try consciously to replace the oppressive system (Boyd, 2012; Din & Ahmed, 2017; Mahur et al., 2019; Nuryatno, 2015).

Research Methodology

This is descriptive qualitative research with library research. The library research enables the researchers to try to reveal new concepts by reading and recording information relevant to the research objectives or needs. Reading materials include books, journals, and scientific works related to the title of this research. In this study, the researchers analysed texts and available data. The data used in this research cover: 1) Primary data sources: the main data sources in the form of works written by Paulo Freire; 2) Secondary data sources: data sources that support primary data in the form of books and scientific articles that discuss Freire’s ideas and critiques of the education system and administration.

Findings

The literature review to explore Paulo Freire’s thoughts results in the following findings, which are presented in the form of critiques on the

teaching of evolution in Islamic schools based on Freire's perspective (see the summary in Table 1):

First, in Freire's critical paradigm, education cannot be separated from politics in a broad sense and that education is not something neutral but must be understood in terms of the relationship between knowledge, power, and ideology. This view encourages us to look critically at our education which is widely adopted and influenced by Western education. In fact, Western education itself is not free from certain agendas and ideologies. The West has experienced a dark history as a result of the arbitrariness of the Roman Church's authority in curbing and blocking the doors of thought and discovery and imposing punishment or inquisition on many innocent people, simply because they are considered to have committed heretics and against the teachings of the church. As witnessed by Martin Luther (1483-1546) in the 16th century, the authorities of the Catholic Church have done many actions that are contrary to Christian teaching itself. In Rome, the holy city of Christians at that time, piety was neglected until witch doctors and prostitutes filled the streets. Church authorities have also abused their authority by selling religion for worldly interests, such as selling indulgences as well as commercialising relics and places of pilgrimage for money.

This bitter experience later turned into a very radical response, in the form of the ideas of secularisation with the spirit to separate religion from all aspects of human life, even resulting in an anti-religious spirit. This condition further led to the emergence of materialism, Darwinism, atheism, and so on, all of which contributed to the development of science and education in the Western world. If these aspects of the Western education system are adopted or borrowed without any critical sorting or filtering, the Western ideology and worldview that are inclined to atheism and secularism can infiltrate our education. Arif Rohman (2013) explained that this borrowing method, namely borrowing education from other nations or countries that are deemed more advanced, regardless of the country's own context has the potential to cause problems. Each country has a different background and socio-cultural context. Thus, what may be considered something appropriate in other countries may not necessarily be appropriate in our own place.

Indonesian curriculum for Biology Majors mostly refers to the Biological Sciences Curriculum Study (BSCS) (Mutia, 2016;

Suryadarma, 1993; Suyanto, 2011), a biology curriculum development organisation in the United States, which was one of the pioneers of the teaching of evolution in the United States in 1950's, a time when the teaching of evolution was still widely prohibited on the basis of the Scopes Court ruling and the Tennessee Supreme Court ruling because religious values (especially Protestant Christianity) were still deeply rooted in society. By 1950, there was competition and increasingly conflicts between the US and the Soviet Union, otherwise known as the Cold War. The US fear of a new world dominated by the Soviets forced the former to make a breakthrough in the field of education, by way of preparing US students to study and take part in science, mathematics, and engineering (Staver, 2015). In this regard, Arias-Vazquez has conducted a study on the impact of education in the US on religiosity (data recorded from 1972). He found that education has had a negative impact on individual religiosity, as marked by a decrease in Church attendance from year to year and a decrease in people's belief about the importance of religion in their lives (Arias-Vazquez, 2012).

Using Freire's critical paradigm, the socio-historical background of education in the US, as well as the results of Arias-Vasquez's research, may give us an idea that the teaching of creation (that God created life) in the US was gradually facing increasing challenges, while the teaching of evolution began to spread. Initially, the religious group tried to champion their rights by demanding the teaching of alternative views in terms of creation (known as Teach the Controversy), apart from the teaching of the theory of evolution. In 1982, in the case of *McLean v. Arkansas Board of Education*, the federal court stated that the Arkansas law which requires the provision of a balanced portion of teaching between evolution and creation has violated the US Constitution's Establishment Clause. The court stated that creationism is not a science. This court verdict led the religious group to demand the teaching of intelligent design in addition to the teaching of evolution. Ultimately, in 2005, Judge John E. Jones at the US District Court issued a ruling that intelligent design is not science, but only a form of endorsement of religion, which highlight that its teaching is unnecessary. This court ruling is in contrast to the fact that intelligent design has avoided all forms of reference to religion and merely shows scientific evidence of evolutionary errors (Matsumura & Mead, 2016; Staver, 2015).

This contextual background should be carefully considered by all parties involved in education in Islamic schools, both curriculum developers, teachers, and authorities (school principals). The Islamic schools shall no longer use the same biology curriculum as the regular curriculum used for public schools which have adopted many of the BSCS curriculum structures. At the very least, there should be a fair and equal portion in the provision of the syllabus and lesson plans developed in Islamic schools, so as to allow sufficient space for the teaching of Islamic creationism to counter scientific evolutionist arguments. Teachers in Islamic schools must have a good understanding of scientific arguments that can invalidate arguments about evolution and vice versa, by way of proving the truth of the Qur'an and Hadith. Islamic schools also require separate student books or modules that are structured in a way that meets this need. This need is also in accordance with Freire's critique of cultural invasion through education by colonial or oppressive groups by indoctrinating values and shifting the culture of colonised communities in order to assert their superiority. According to Freire, education should be dynamic, contextual, classless and without discrimination (Mansyur, 2014).

The second point is on Freire's view of the non-neutrality of science. Science is not value free but is a reconstruction in a society. As Foucault (1926-1984) articulated, the power system in society produces a reconstruction of knowledge related to the interests of the ruling group (Gianto, 2012). As seen from the fact that science talks are concerned with objects or phenomena that are objective in nature, neutrality can evidently be maximally pursued. Nonetheless, scientific products are no longer mere raw data as they are. The product of science involves the intellectual and psychological activities of scientists in viewing, analysing and interpreting existing data, which opens the door for the entry of scientist subjectivity in some scientific discussions. The subjectivity of researchers has taken a role even since the very beginning, when they have started the process of searching and researching facts or choosing what theme to study (Fata & Noorhayati, 2016). Fata & Noorhayati's explanation is scientific and logical if it is not interpreted negatively as a rejection of science but is interpreted as a critique that modern science being taught today is motivated by a secular Western epistemology (Setiawan, 2017; Tanjung, 2019). Biology as part of science is also covered in this. Staver (2015) explains that Darwin's

work has contributed three important elements in the advancement of biological science. First, the theory of evolution to explain the origin of species and as a unifying theme for the branches of biology. The same idea was stated by Campbell et al. (2011). Second, to become a new framework for future scientific studies. Third, to change the philosophy of knowledge regarding the origin of life, in that, there is no mention of God's plans or actions, which put aside faith in biology. Moreover, the American philosopher and cognitive scientist, Daniel C. Dennett, calls Darwin's work a "universal acid" that can destroy religious views of the existence of God, the soul, and life after death. There is nothing special in humans, because it is no different from other animals (Evans & Selina, 2010; Sternberg, 1999). Dennett is known as one of "The Four Horseman of New Atheism" along with Richard Dawkins, Sam Harris, and Christopher Hitchens (Finley, 2019).

The third point is on Freire's classification of human consciousness into three: magical consciousness, naïve consciousness, and critical awareness. We can use this classification to understand the state of the people involved in education (including the students themselves and their parents) in relation to the teaching of evolution. The first group refers to people who are still in the level of magical consciousness. This group is still shackled by the inferiority myth, that everything that exists and originates from the Western world is progress. In their view, Western science is entirely true, neutral and flawless; and therefore, the way to achieve progress (including in education and scientific advancement) is to entirely comply with them. As seen from the theory of the hidden curriculum, if we position the hidden secularisation behind the teaching of evolution as a hidden curriculum, it will be deliberately covered up and stamped by scientific elites or colonisers as "legitimate science" and otherwise considered unscientific; pseudoscience; and not science, which makes people unaware of the problems in it, thinking that all is well (Margolis, 2001). This was reinforced by Efendy who explained that education observers had considered that the curriculum was actually a political product, namely that the curriculum product was part of the political process of a nation. As a political product, this curriculum is vulnerable to politicisation of the elites of a nation. Epistemologically, the curriculum is the result of a battle between the philosophical discourses adopted by each ideological carrier, and likewise with the Western curriculum. This Western influence, consciously or not, has had

an impact on the education system in Indonesia, which some experts have included in the Third World construction. As a consequence, the colonisation of markets and ideas in Indonesia has taken place very smoothly. Often without even realising it, our society has participated in the efforts to market the global ideas. This Western paradigm then penetrates and influences the global epistemology system, which requires that scientific studies and findings must refer to it. Otherwise, they will be labelled as unscientific (Efendy, 2015).

Table 1. Some Freirean Views of Education and Their Relevance in the Critique on the Teaching of Evolution

No	Freire’s View	Relevance in the Critique of the Teaching of Evolution
1	Education is inseparable from politics (in a broad sense) and that it is not something neutral but must be understood in terms of the relation between knowledge, power and ideology.	This serves as a criticism on Indonesian education, which widely adopts and is influenced by Western education. In fact, Western education is never free from certain agendas and ideologies. If these aspects of the Western education system are adopted or borrowed without being critically sorted or filtered, the Western ideology and worldview that are inclined to atheism and secularism can infiltrate our education. This criticism also covers a biology curriculum that includes the teaching of evolution.
2	Schools reflect the interests of the colonisers or oppressive elites in power, so that the aspirations and needs of the colonised group are usually ignored. The colonial group indoctrinated values through education and shifted the culture of the colonised society in order to assert their superiority. Education should be dynamic, contextual, classless and without discrimination.	The biology curriculum in Islamic schools should be structured based on the context, and it is not to be equated with the curriculum for general schools, by way of providing a fair and equal portion for the teaching of Islamic creationism to counter evolutionist scientific arguments.

No	Freire's View	Relevance in the Critique of the Teaching of Evolution
3	The non-neutrality of science: science is not free of value but is a reconstruction in a society related to the interests of the ruling group.	Biology as part of science is also not a neutral subject. Especially through the theory of evolution, atheism has infiltrated biological science. Teaching evolution and evidence of evolution can destroy students' religious beliefs about the existence of God, the spirit, and the existence of an afterlife. In this view, humans are not special creatures, because they are no different from other animals.
4	Freire's classification of human consciousness into three: magical consciousness, naive consciousness, and critical awareness.	In connection with the teaching of evolution, the state of the people involved in education can be divided into three as well. The first group is people who are still shackled by the myth that everything that exists and originates from the Western world is progress; Western science is entirely true, neutral and flawless; and therefore, the way to progress is to follow them. They do not realise that there is a problem in the education system and consider that all is well. The second group is those who have gained an understanding on the problem but do not dare to leave the safe zone. The third group is those who are aware of and trying to change the situation according to their own profession.
5	Freire's concept of alienation	This concept can explain the situation when students receive educational materials that are not in accordance with their religious beliefs. This condition will lead students to experience alienation - alienation from society and even from themselves, experience split personality, and make them tossed and torn.

No	Freire's View	Relevance in the Critique of the Teaching of Evolution
6	Critical literacy program to raise awareness on the reality of social inequality as a manifestation of abuse of power, oppression, or marginalisation.	It is necessary to implement critical literacy programs in Islamic schools and colleges to raise awareness of problems in evolutionary theory and its teaching.

The second group refers to people who are in the level of a naïve consciousness. These people are actually aware of the real situation, namely the problem in the teaching of evolution to children. They already know the agenda or interests behind it. However, they do not want to act or speak up to challenge and voice their rights. This condition may be attributed to fear of being sanctioned because they are in an oppressive system ruled by the elites who also believe in and justify evolution. An example of this case is a lecturer at Biology Faculty at a university who is afraid to speak out for creationism because he is worried about the accusation of complying with the radical-fundamentalist group and thus will be reported to his superiors so that he will be fired. Otherwise, it could be because of a feeling of being unable to make changes. The third group are those who have reached critical awareness. They have been able to reflect and see the relationship between one factor and another. In this case, for example, these group of people will be looking at the relationship between the increasingly rapid secularisation and materials in the curriculum that do lead to secular understanding. These people refuse to perpetuate the oppression of these elites, and are trying in whatever way they can to improve the situation.

The fourth point refers to Freire's concept of alienation: human consciousness that has been controlled or shackled by an ideological superstructure that exists outside of themselves, which makes them alienated and separated from their world, from their group or society. This concept can explain the situation when students receive educational material that is irrelevant to them, which contains the values of secularism or atheism, which make them excluded from their social community (which in this case is the context of a religious Indonesian society), and even alienated from themselves, because they have to accept what is contrary to their beliefs. The teaching of secular sciences that is contrary to religious beliefs, in addition to the absence of answers that can counter these views satisfactorily, will create a situation that

is described as someone who lives with a split personality. On the one hand, he must speak as an educated person by referring to scientific explanations of the origin of life, human origins, and the speciation process; but on the other hand, he is a Muslim who believes in the truth of divine revelation which contains values contradicting what is described by science. Under these circumstances, he will be tossed and torn between the two views (Kartanegara, 2005; Kuntowijoyo, 2001; Sopater, 1987).

The fifth point refers to Freire's literacy program, which aims to raise awareness of the reality of social inequality as a manifestation of abuse of power, oppression, or marginalisation. This program can be applied to Islamic *madrasas*, schools or universities. This program is not intended to teach students how to read letters, because problems related to illiteracy have been resolved in Indonesia. The literacy of this program refers to critical literacy, as a way to raise awareness of problems in evolutionary theory and teaching. Libraries in Islamic schools and colleges need to budget funds to provide books written by scientists with proven credibility to challenge the theory of evolution. In biology classes, teachers or lecturers can increase the critical literacy of their students by programming them to read creationist books. Textbook developers also need to include useful materials for cultivating this awareness in student or teacher handbooks. Some examples may include: the roots of Western philosophy behind the emergence of the theory of evolution, scientists who reject the theory of evolution, gaps that confuses Darwin in *On the Origin of the Species*, empirical evidence against the theory of evolution, the relationship between Darwinism and racism, and so on.

Discussion

The research implies that Freire's critical paradigm can be a new way of looking at teaching and learning critically by focusing on the attempt to uncover key issues or concepts that include ideology, hegemony, resistance, power, knowledge construction, class, cultural politics, and emancipation. Freire's ideas provide a perspective to help see the true reality, which most people do not realise because their consciousness lies in the level of magical consciousness, as they are trapped in myths crammed by the elite. Thus, instead of struggling or changing the reality in which they live, they justify it, reinforce it, and adjust themselves to

the oppression. Freire's ideas are born out of original conception that can hardly be found in, for instance, other philosophical schools. The critical education paradigm is the only school of educational philosophy that reveals the political content (in a broad sense) of all educational activities. Education is not situated in a sterile space and mass, but is a political activity in facing hegemonic systems and structures. Education is understood in terms of the relations between knowledge, power and ideology. This notion is very useful and becomes a gate to understanding many educational social phenomena.

Based on philosophical studies and educational theories, this research findings prove that criticism on the teaching of evolution is possible and is part of a scientific academic discussion. Affiliation to a particular faith and rejection of Darwinian views are not to be equated with rejection of science. Even after Darwin published his work *On the Origin of Species* in 1859, the foremost French biologist Louis Pasteur (1822-1895) tried to test the correctness of the theory of abiogenesis or spontaneous generation which formed the basis for the Darwinian view of origin of life. Pasteur made a simple experiment using a flask that had a long neck that curved downward like a goose and has proven the theory of biogenesis and is recognised by the world. His revolutionary ideas laid the foundation for modern medicine and science, such as: sterilisation techniques, aseptic procedures in surgery, and epidemiology (Gillen & Sherwin, 2008).

The results of the current research still lie at theoretical level, and thus still need further developments. Some possible ideas for further researches on this topic include: a phenomenological attempt to see how teachers respond to curriculum policies in the teaching of evolution, or the attempt to see whether there has been a change in students after learning the theory of evolution. This research can also serve as the basis for developing instructional designs in Islamic schools.

Conclusion

From this study, we can draw some conclusions based on the Freirean perspective that leads to several criticisms on the teaching of evolution in Islamic schools: (1) science, including biology is not completely neutral. The teaching of evolution to Muslim students in a religious society in Indonesia may potentially contribute to the process of secularisation and bring about the formation of a split personality, (2) the applicable

biology curriculum - especially in Islamic schools - should be sorted and filtered, (3) the biology curriculum in Islamic schools should not be equated with that in public schools. Hence, it is necessary to prepare the biology curriculum by considering the context, and there must be a fair and equal portion of the teaching of Islamic creationism in addition to the teaching of evolution as a way to counter evolutionist arguments, (4) many parties involved in education (teachers, students, curriculum developers, and so on) comply with the theory of evolution and fail to see the problems because they are still trapped in magical consciousness, and (5) it is necessary to promote critical literacy in Islamic schools and colleges to raise the awareness of the problems in evolutionary theory and in its teaching.

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