USEJ 7 (1) (2018)

Unnes Science Education Journal

http://journal.unnes.ac.id/sju/index.php/usej

STAGES OF ISLAMIZATION OF SCIENCE ACCORDING TO ISMAIL RAJI AL-FARUQI AS UNITY OF SCIENCES EFFORTS AND IMPLEMENTATION IN THE PRACTICAL GUIDANCE OF CHEMISTRY

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Article Info

Received July 2017
Accepted December 2017
Published February 2018

Keywords:
Islamization, Ismail Raji Al-Faruqi, Guidance of Chemistry's Practicum, Unity of Sciences

Abstract

This research explains the concept of Islamization from an influential figure of Islam, Ismail Raji Al-Faruqi. He was born in Jaffa, Palestine at 1st January 1921. He was born in the middle of conflict between the countries to Israel. An influencer to Islamic nuance of science, he was one of the figures in the raising movement of Islamic at the First World Conference on Muslim Education in 1977 in Mecca. The path of the movement (1970s) contributes to the concept of Islamization. It is claimed that his mindset is also influenced by the activist of Islamization, Syed Muhammad Naquib Al-Attas. The paradigm of this research is qualitative paradigm. The primary data were obtained from Ismail Raji Al-Faruqi's book entitled Islamization of Knowledge: General Principles and Work Plan. Meanwhile, the secondary source came from journals, books, archives, or related documentation. Thus, the data were collected by library research by using some related literatures. The method of primary data interpretation used textual, contextual, and contextualized interpretation (hermeneutics effort). The writer also reviewed some sources constructed as systematic thoughts and implement it to the planning strategy of chemistry's practicum. This research aimed to explore ideas of Ismail Raji Al-Faruqi regading the paradigm of Unity of Sciences. This theoretical framework was then developed to plan chemistry's practicum for Senior High School students.

p-ISSN 2252-6617
e-ISSN 252-6232

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INTRODUCTION

Biography of Ismail Raji Al-Faruqi

Ismail Raji Abdul Huda Al-Faruqi was born from a noble family in Jaffa, 1st January 1921. It is an area in Palestine which has not been influenced by political conflict with Israel (Eniyawati, 2015). Ba-Yunus in Asran and Zakaria (2015) states that al-Faruqi was born in the year of 1922M/1341H. His father is Abdul Huda Al-Faruqi, a *qadi,* who has high level of religiosity in Palestina. Eventhough he was born when the political conflict has not raised, Ismail Raji Al-Faruqi grew when the conflict started (Hasanah, 2017). His family name, *Al-Faruqi,* is a last name for *nasab* (the descent) of Khalifa, 'Umar ibn Khattab Al-Faruqi (Asran & Zakaria, 2015). There is an evidence that the invasion of Palestine from the Rome by Arabs was in the era of Umar bin Khattab under the commands of Yazid bin Mu'awiyah (Rijal, 2014).

Al-Faruqi (the nickname in literary works) is known as the experts of religion's comparison and Pan-Islamism (Rahimah, 2003). He was an opponent to Israel until he died. However, he still accepted Western civilization which assimilate with local civilization—Islam (Sholehuddin, 2010). It is evident from his educational background. He admitted into heterogenous campus. Soleh (2013) mentions Al-Faruqi's education as:

1. *College des Ferese* in Lebanon, then *American University*, Beirut: Philosophy program.
2. Indiana University: Master of Philosophy, 1949
3. Harvard University: Master of Philosophy, 1951
4. Indiana University: Ph.D from Indiana University, 1952
5. Al-Faruqi moved to Al-Azhar University, Cairo for four years. He learned about Islam to deepen his religiosity. From his background, he spent more time to study outside of Palestine due to the in-conducive condition in Palestine then (Rahman, 2014).

Rahman (2014) and Soleh (2013) explain that the debut of Al-Faruqi in Islamic world started after he earned his B.A. in 1941. He ever became the worker of Palestine government in 4 years. He was then appointed as the Governor of Galilea until 1947. Somehow, the province was forcefully colonized by Israel. That was the main factor why Al-Faruqi had to move to United States of America to continue his study. Since the condition was getting worse, in the following year or 14th May 1948, Israel was declared as a country assigned by United Kingdom which promoted Jewish village with the population of almost 40,000 (Rijal, 2014).

Not only studying in Cairo, he also contributed in education by teaching in some places. Rahman (2014) notes that Al-Faruqi ever taught in

1. McGill University, Montreal, Canada
2. Faculty of Religious Study, University of Chicago, United States of America
3. The head of Islamic study program in Temple University, Philadelphia
4. Director of Islamic Institute, University of Chicago
5. Director of International Islamic Thinker, Washington
6. President of Higher Education Institute, Washington.

He had many literatures which have been published and translated to many languages. They have been reviewed in many country whether in scientific magazine of in popular book. More than twenty books have been translated. Some of his famous products are *From Here We Start*, *Our Beginning in Wisdom, the Policy of Tomorrow, 'Urubah and Religion: An Analysis of the Dominant Ideas of Arabism and of Islam as its Heights Moment of* consciousness, etc. Albiruni (2017) say that he exactly had published 23 books which constructed the paradigm of Unity of Sciences.

This research is only limited to his publishing entitled *Islamization of Knowledge: General Principles and Work Plan.* His ideas regarding Islamization are presented in the book along with his advocacy to Islam.

Al-Faruqi's Way of Thinking

Al-Faruqi works based on the pattern of Islamization. He was the initiator of International Islamization which had initially started by Syed Naquib Al-Attas (Afifah, 2016). Afifah (2016) states that Al-Attas' ideas regarding Islamization inspired Al-Faruqi. It is related to problems among Moslems who are deemed as the consumers of Western knowledge until the politic of secularism.

Al-Faruqi's mindset is strongly related to oppose many things contradicting to Islam, for example, colonialism. Al-Faruqi (1989: 4) says

The colonialists attacked everything Islamic either directly or by their native puppets. The perfection of the Qur'anic text, the Message of the Prophet (SAAS), the veracity of the Sunnah, the comprehensiveness of the Shari'ah, and the glories of Muslim achievements in culture and civilization were severely denigrated; none of them were spared.

Al-Faruqi (1989) views that Moslem can become the object of discrimination, hatred, and mockery which is worsened with the turbulence of internal conflicts among them. It is seen in the political conflict with Israel where most Moslems were discriminated.

The heating socio-cultural and political condition influenced Faruqi's thought to become *bayani* (philosophical) and *burhani* (Allawiyah, 2011). *Bayani* is a method to learn by understanding and catching the main points delivered from the overall messages with the principle of *manhajiyah,* the methodology which has been stated by many Moslem Ulama, while *Burhani* is a method of thinking based on rational calculues with systematic method. Many Moslems scientist formulated this method based on the Greek philosophy of Aristotle (Ibrahim, 2014).

The Guidance of Practicum and Islamization of Science Paradigm

Practicum is an activity held to develop students' processing skills, where they are asked to inquire an answer themselves (Munika, Mujamil & Desi, 2015) or to confirm abstract theory in an experiment. Thus, in practicum of chemistry, students are asked to discover the abstract theory of chemistry (Karlina, Kurniasih & Fitriani, 2016). In the practicum, as in the other teaching and learning activity, it has been inserted with character building. The National Ministry of Education has developed the values of characters. In Mitarlis (2012), government's efforts has been inhibited by certain parties which consider that the integration of character is only meaningless.

Practicum of chemistry is a constructivist learning process demanding the students to build structure of knowledge obtained through the experiences that they got before. It integrates cognitive aspect with psychomotor (Nugroho, Budiasih & Sukarianingsih, 2013). Utomo, Sari & Budiasih (2010) say that practicum can show students' affective competence where they will try to fulfill their curiosity, improve their cooperativeness, communication, and appreciate knowledge. In its process, practicum needs some factors, like teachers' preparation, guidance of practicum, and scoring (Tresnawari and Dwiyanti, 2013).

Islamization in Science in Indonesia's education is given a part in the first Core Competence (KI-1), based on the Syllabus for Senior High School students in the form of "Be aware and practice religious values". As stated by Al-Faruqi, the main activity in religion is real -life practice (experience), quality depends on the ones who improve their practices (Al-Faruqi, 1989). Al-Faruqi (1989) in the sub-chapter of *Islamization of Knowledge,* combines education and practice as thought and action.

In this paper, the paradigm of 'religious practice' in education (as in KI-1) with 'daily religious practice' (amal saleh) is expected to be inserted in the practice of Chemistry. The practicum of chemistry will be constructed based on Al-Faruqi's mindset to be proposed as an Islamic education media in the future.

METHODS

This research employed Explorative-Library Research. It is a method of research aiming to reveal everythings done by documentation (analysis of book, historical research, etc) (Suwahono, 2012).

The discussion of this research only coped the psychomotor aspect of teh Basic Competence of 4.9 for X grade students in the Syllabus for Senior High School students as 'analyzing some reactions based on the oxidation which was obtained from experiments.

RESULTS AND DISCUSSION

Stages of Islamization by Al-Faruqi

Al-Faruqi formulates his thoughts with some background. The factors are the increasing level of illiteracy, ignorance, and belief to superstition among Moslems. The assimilation of Islam and Western modernization makes many Moslems attracted to the modernity, causing Westernization among Moslems (Zuhdiyah, 2016).

Due to this setback, Al-Faruqi (1989) formulates Islamization of Science in the sub-chapter of *Priorities in the Ummatic Scheme for the "Islamization of Knowledge".* The stages of

Islamization are: 1) First stage; 2) Second stage. The first stage is divided into two parts, while the second stage is also divided into two parts. The researcher arranged it into four stages of Islamization as follows.

1. Mastery of the Modern Sciences

In this stage, people should master methodology, critical and analysis to Western perspective with the breakthrough of Islamic perspective (Al-Faruqi, 1989). Abidin (2008) in his dissertation states that Al-Faruqi acknowledges the excellence of modern science. However, he selects some relevant technologies which can be references. Fixed methodology becomes the foundation of his methodology, which is based on Tauhid (Allah the Almighty) (Akbar, 2015).

2. Mastery of the Legacy

In Islamic context, education is practiced by individuals through prayers and *muamalat*, which is related to each other and inherited through generations. Therefore, it can bear strong community of *khalifa* (Hassan, et.al., 2010). A worshipper of Islam (Muslim) should have the fundamental science of Al-Qur'an and Sunnah (Al-Faruqi, 1989).

3. Defining the Main Issues

It is very important for Islamic intellectuals to understand the problems of economy, social, and politics from *Ummah*, such as corruption, inefficient governance, and weak character education (Al-Faruqi, 1989). For example, the solution of moral problems happen to the case of moral degradation among children due to their infamous role models. As a solution, there should be *Murabbi* to solve this (Jaafar, et.al., 2012)—thereby, the main issue is the recovery of morals.

4. Islamic Creativity and Initiatives

Creativity is one of four factors of success (creativity, reflects, cooperation, and responsibility) in learning approach. In education, people can produce renewable things to improve the quality of things (Lubis, et.al., 2010).

Creativity will release a contribution. Islamic contribution in Al-Faruqi (1989) is mentioned as it will follow the guidance and fundamental direction to the mastery of Islamic legacy (Qur'an and Sunnah), where Qur'an and Sunnah will direct people to think critically and methodologically to recent phenomenon in this era.

The Stages of Implementation to the Islamization in the Guidance of Practicum

The stages of Islamization based on Ismail Raji Al-Faruqi can be arranged as follows.

1. The theoretical analysis to the guidance of practicum and issues of daily life

This stage is the reference of Al-Faruqi to the master of modern science (first stage). In this step, the issue of chemistry is being connected to daily life issues to make it relevant with students' life. Therefore, students can understand the material better as the theory of Dale's Cone of Experience (Huda, 2016).

The guidance of practicum to the Basic Competence of 4.9 for X grade students explain the indicator of psychomotor as the students are expected to identify some chemical reactions based on oxidation number through experiments.

The researcher provided an example of reaction of combustion which produces CO_2 gas and other phenomenon with related product, like breathing. The practicum of chemistry should use the principle of Green Chemistry (the twelfth principle), that it will be safer for students to avoid accident (Wahyuningsih & Rohmah, 2017).

2. The Approach of Religious Content

Religion is related to all aspects of science, including the ratio, emotion, spiritual, and physical, thereby, Islam will not limit its worshipper to learn other fields (Hassan *et.al.*, 2010). From the statement, modern science can be integrated to religion.

The famous example to the concept of religious approach is *Tazkiyah al-Nafs,* Imam Al-Ghazali (cited in Jaafar *et.al.*, 2012) which explain that science and behavior will guide people to the purity of soul and awareness to Allah (*Ma'rifah*). It is represented through faith or belief. In Abd Rahman Assegaf (cited in Hidayat, 2014), this approach is included as the integration of materials which is the integration of values of general truth to Islamic values.

In this step, teacher can implement the mastery of Islamic knowledge (taken from the stages of Al-Faruqi) to the guidance of practicum. The basic competence of 4.9 for X grade students has Islamic science which is related to the process of breathing (CO_2 production) which is later contextualized. For example in the Hadith of Prophet Mohammed

in Sohrah (2016), there is an ethic of prohibiting people to breath in a bottle of water as.

From Abdullah bin Abi Qatadah from his father said that, Prophet Mohammed SAW preached: "If there is one of you drink, do not ever breathe in the place (bottle) you drink…"

3. Evaluation

Spiritual and emotional development can be evaluated through the scoring of life experience (Ashaari *et.al.*, 2012). The role of teacher as the *Murabbi* is very important to 'treat' the students (Jaafar *et.al.*, 2012). It means teacher monitors the development of the students in the practicum, whether to the psychomotor instrument or the spiritual one.

CONCLUSION

Al-Faruqi's Islamization of Science can be a foundation to construct the guidance of practicum, which steps are: 1) The Mastery of Modern Science; 2) The Master of Legacy; 3) Defining the Main Issue; 4) Islamic Creativity and Initiatives. From the islamization steps, it can be concluded that the implementattion of the practicum is based on certain stages: 1) The theoretical analysis to the guidance of practicum and issues of daily life; 2) The Approach of Religious Content; 3) Evaluation.

ACKNOWLEDGEMENT

This acknowledgement is indebted to the Department of Chemistry Education, Universitas Islam Negeri Walisongo, Semarang.

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APPENDIX

Title of Practicum: Formation of $CaCO_3$
Class: X of Senior High School
Do we exhale CO_2 out of breathe?

I. Objectives

It is expected that students (through this practicum) are able to:

1. Identify the existence of CO_2 as the residue of respiration.
2. Discover new ideas to reduce the level of CO_2 in the environment (reaction product).

II. Initial Questions

1. What do you know about the process of respiration (breathing)?
2. Have you ever watched people burn something? What was happened?
3. What is the meaning of greenhouse effect?

III. Theoretical Background

Combustion is oxygen's oxidation toward organic or anorganic substance. Generally, perfect burning from hydrocarbon with oxygene will produce carbon dioxide and water (Moore, 2010).
General reaction: $C_xH_y + O_{2(g)} \rightarrow CO_{2(g)} + H_2O_{(l)}$
The example of daily life utilization of this combustion is machine fuels which produce moving chlor, combustion for steam power, or simply as a warmer during the winter or cold season. The utilization of combustion principle is increasing directly proportional to the increasing number of vehicle in the world. Toni Samiaji (2012) reports that the increase of CO_2 in Indonesia in the period of 2004-2010 were from 373 ppm to become 383 ppm. If it is neglected, there will be a gap to the supply and demand of carbon dioxide in the nature. In the United States of America and Brazil, the use of fuel has been changed into natural fuel. It is like the bio-chemical reaction to sugarcane which produces ethanol. In 2007, US can produce ethanol until 6.5 million gallons, followed by Brazil in about 5 million gallons (Solomon, 2010).
Carbon dioxide (CO_2) is a gas which can cause greenhouse effect. The other gases with the same characters are sulphur dioxide (SO_2), nitrogen monoxide (NO), and nitrogen dioxide (NO_2) along with some organic compounds, such as methane (CH_4) and chloro fluoro carbon (CFC or CH_2FCl). Greenhouse effect is the increasing temperature due to the inhibition of long waves to the atmosphere, the heat which should be released to the sky be reflected back to Earth (stratosphere)—reflection or mirror (Sutoyo, 2011). It can happen naturally and able to be done due to human's activities.

Theoretical Bases

Sutoyo (2011) reports that the physiological influence of the increase of CO_2 is the increasing rate of assimilation (rate of CO_2 fixation to form carbohydrate, photosyntesis) of leaves. The efficiency of other increasing factors are sun's radiation, water, and nutrition. To reach the stability of world climate, there should be a balance between fixations of carbon dioxide by plants with the increasing rates of carbon dioxide. It also happens to our body, carbondioxide can become the stabilizer of pH and the acidity of blood if the total is balanced with oxygene during metabolism (Baharuddin Afandi, 2009).

Campbell (2014) and Toni Samiaji (2012) explain that plants produce energy (ATP) and nutrition (organic compound) from photosynthesis. It still needs carbon dioxide (from the different way of CO_2 fixation in each type of plants). The process in a tissue is very complex, yet it eases the way to write reaction between carbon dioxide and water with the help of the sunlight to produce carbohydrate ($C_6H_{12}O_6$) and Oxygen (O_2).
Human respirates to release carbon dioxide and plants will absorb it for photosynthesis to produce oxygen. Is it true? Can we prove the existence of CO_2 around us?

To answer the questions above, we need to identify the character of the substance. The product of hydrocarbon (CO_2) combustion is very different to its reactant (O_2). Unlike oxygen, carbon dioxide is not reactive and flammable. It also inhibits the process of combustion if it is combined with fuels (Djoko Wahyudi, 2012). Scientist are able to formulate the bonding of CO_2 with $Ca(OH)_2$ to form $CaCO_3$ (Masyhuri, 2013).
Reaction: $Ca(OH)_{2(aq)} + CO_{2(g)} \rightarrow CaCO_{3(s)} + H_2O_{(l)}$ (Vogel, 1979)
Calcium Hydroxide, or $Ca(OH)_2$ is a chemical compound with the chemical formula of $Ca(OH)_2$. $Ca(OH)_2$ solution is called as chalk water and a base with medium power. The solution reacts greatly with different acid and many metals due to the existence of water. The solution will be murky after the crossing of carbon dioxide, due to the sedimentation of calcium carbonate (Masyhuri, 2013). The product of this Carbonate ($CaCO_3$) can also set pH from the fermentation of materials (Pramudyanti, 2004).

Ramesh (2015) reports that $Ca(OH)_2$ can get adsorbent with low-costs due to the cheaper price than other adsorbent from $Ca(OH)_2$. It is also functioned to absorp dyes.

In our daily life, is it better to drink or to eat first?
To know how Islam reviews respiration (exhaling CO_2), these hadith regulates the procedures of drinking.
From Abu Qatadah, Nabi Shallallahu 'alaihi wa sallam preaches, "if you want to drink, don't take your breath in the glasses." (HR. Bukhari no.5630 and Muslim no. 263)
From Ibnu Abbas, "Actually, Nabi Shallallahu 'alaihi wa sallam prohibits to take breathe or exhale on the glass (water place)." (HR. Turmudzi no. 1888 and Abu Dawud no.3728, this hadith was validated by Al-Albani)
In *syarah shahih Muslim*, Imam Nawawi is afraid to pollute drinking water. Therefore, *Rasul* prohibit two things, to take breather of the glass (water place) or blow it.

IV. Tools and Equipment

Tools	Equipment
1. 3 Test tubes or clear glassed 2. Mixer	1. Water in 5 ml 2. 5 gr of Lime Betel of $Ca(OH)_2$ 3. A small plant (beside grass) 4. Matches 5. 1 piece of paper 6. Straw

V. Working Procedures

Job map: students were asked to arrange tools with certain objective to form $CaCO_3$, including:
1. The influence of Human's respiration
2. The influence of combustion residues
3. The influence of plant

VI. Questions

1. Do we exhale CO_2 to breathe? Prove it! Write down the reaction!
2. Are all CO_2 the residue of combustion? What happened to human?
3. Why plants and the forest can be said as the balancer of world's temperature and life (world's lungs)? How is your opinion regarding the burning of the forest? What is the solution to it?