Integration of Islam and Science: Study of Two Science Pesantrens (Trensain) in Jombang and Sragen

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Abstract

This study reviewed about the implementation of integrating Islam and science in curriculum practice at two science Pesantrens both in Sragen and Jombang. The research method used in this study was documents study which focused on the detail curriculum existed in both Science Pesantrens (Trensain) Tebuireng Jombang and Sragen. The documents were taken from their Pesantren Web. Data analysis was conducted by using descriptive qualitative analysis. The result of the study shows that education in those Sragen and Jombang Science Pesantren (Trensain) is a form of creativity in the framework of integration of Islam and natural science. Further, it combines models between school institution and Pesantren. Their integration framework refers to normative power (Quran and Sunnah), philosophical power, strengthening the mastery of natural science, and power of foreign language mastery.

Keywords: *Pesantren, Integration, Islam and Science*

Abstrak

Penelitian ini mengkaji implementasi integrasi Islam dan sain dalam praktek kurikulum di dua pesantren sain baik Sragen maupun Jombang. Metode Penelitian menggunakan studi dokumen seluk beluk kurikulum yang ada di dua tempat yaitu Pesantren Sain (Trensain) Tebuireng Jombang dan Sragen. Dokumen ini diambil dari web lembaga tersebut. Analisis data dengan menggunakan analisis kualitatif deskriptif. Hasil penelitian menunjukkan bahwa Pendidikan di Pesantren Sain (Trensain) Sragen dan Jombang merupakan bentuk kreatifikas dalam kerangka integrasi Islam dan sain kealaman sekaligus menggabungkan model antara lembaga sekolah dan pesantren. Kerangka integrasinya mengacu pada kekuatan normatif (Qur'an dan Sunnah), kekuatan filsosofis, penguatan penguasaan sain kealaman, dan kekuatan kepemilikan bahasa asing.

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Kata Kunci: Pesantren, Integrasi, Islam dan Sains

Introduction

The discussion of integrating Islam and science is still interesting until the present time. There have been debates about integrating Islam and science among muslim scholars. Some of them consider there is no clear relationship between science and religion (Islam). On the contrary, to others, there is a close relationship between science and Islam.

Even in Indonesia, the long discussions about that problem still occur. But those discussions become less interesting because most of the time, the review is absurd and seems to be more dominant in visualizing the model of integrating Islam and science in form of pictures, as it happens in almost all of Islamic State Universities (UIN). Sometimes the discussions did not touch the root of educational problem which is on the basis of human's view-both as students, as well as teachers- and also the level of education that frequently goes directly to the integration of Islam and science in university. It is often found secular reviews of science (the area of subjects, concentration, program of study, and also department) in UIN that don't show a clear distinction with other universities under the Ministry of Technology, Research, and Higher Education. Meanwhile, according to Hadi Nur [1] the integration implementation of science, technology, and religion should be seen in four aspects: conceptual, institutional, operational, and architecture.

It will be less meaningful if we only rely on the integration of Islam and science in higher education level. The integration of Islam and science should be started from all educational lanes (education at home, society, then continued to schools, the variety and the level of education). Without integrating those three lanes altogether and simultaneously, the efforts will not touch the root of the problems. Also the integration of Islam and science should be started since pre-school education to higher education in order to make it continuously. If the practice is only implemented in higher education level, while the secularism athmosphere still happens since the lowest level of

[1] Hadi Nur, "Integrating Science, Technology and Religion," *A Universiti Teknologi Malaysia Perspective*, 2012.

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education, then it won't bring benefits to the development of higher education that integrate Islam and science.

The review of Islam and science integration will be in touch with people's culture in religion practice. Kuntowijoyo[2] stated that Islam is portrayed in the following table:

Table 1. Display of Islam

Basic: Values of Islam	**Mith**	**Ideology**	**Science**
Way of thinking	Pre-Logic	Non-Logic	Logic
Form	Magic	Abstract/a priori	concrete/empiric

Based on the table, it is found that the review and the practice of Islam is still in myth and ideological level. That's why Islam doesn't become the problem solver for muslim and humanity problems. Meanwhile, according to M. Syafii Anwar,[3] he states that Islam should be oriented to the empiricism and should become the problem solver for people, strengthen people through social practice and politics, and bargain with the state as well.

Reviews about how scientific al-Qur'an and sunnah are getting various from year to year. Whether it is individually or collectively, both locally or internationally. The review is individually because it is arranged by only one writer. For example, review of psychology by Ahmad Mubarok from Indonesia in 1999. While from abroad, there was the book of spirit science in al-Qur'an writen by M. Utsman Najati. It was firstly published in 1985. In exact science, there was a book entitled *al-Qur'an: Ilmu Kedokteran Jiwa dan Kesehatan Jiwa* (al-Qur'an: Science of Spirit Medicine and Health) written by Dadang Hawari that published in 1998. Previously in 1976 Maurice Bucaille wrote Bible, al-Qur'an, and modern science or La Bible, Le Coran et La science in French. The newest one was by Agus Purwanto, a physician from ITS. He wrote about the Verses of the Universe: the Forgotten Sides of al-Qur'an (2012) and the Logic of the Verses of the Universe. Both reviews focused more on science specially on physics. While a various review in al-Qur'an was conducted by Nadiah Thayyarah (2013). The title was smart book of science in al-Qur'an. There were a lot of matters discussed in the book

[2] Kuntowijoyo, *Muslim Tanpa Masjid* (Bandung: Mizan, 2001).
[3] Syafi'i Anwar, *Pemikiran Dan Aksi Islam Indonesia* (Jakarta: Paramadina, 1995), 129.

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such as the miracle of Al-qur'an and the relationship with various science whether in medical field, embriology, astronomy, as well as food.

Unfortunately, in fact, those who conducted reviews on Islam and science in UIN only worked more on one area; the discourse. There were no many people who developed the reviews both in discourse and in the practice altogether. The synergy development between the discourse and the practice in secondary education level in pesantren held at SMA in Tebuireng and Sragen. It was inisiated by Agus Purwanto. These two kinds of education were named science pesantren (Trensain), that hold education in Senior high school (SMA) level.

This writing is different from M. Yasin Yusuf's[4] that discussed the epistemology area of SMA Trensain Tebuireng Jombang. The development of Islamic epistemology for science in SMA Trensain will create pious muslim generation in religion and expert in science and technology. Later on, it's expected to contribute to the glory of Islamic civilization in the future. This writing will review the implementation of integrating science into the curriculum practice in both science pesantrens in Sragen and Jombang.

Reviews of Integrating Islam and Science

Furlow[5] divided Islamization discourse of knowledge to be six parts, namely first Discourse: Articulating the Islamic Paradigm of Knowledge (Tawhidi Episteme), Second Discourse: Developing a Qur'anic Methodology, Third Discourse: Methodology for Dealing with the Qur'an, Fourth Discourse: Methodology for Dealing with the Sunnah, Fifth Discourse: Re-Examining the Islamic Heritage, Sixth Discourse: Dealing with the Western Intellectual Heritage.

Those six discourses show that the discourse of Islamization includes: articulating Islamic knowledge paradigms (Tawhidi Episteme), developing a methodology of Qur'an, methodology dealing with the Qur'an, methodology

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4 Mohamad Yasin Yusuf, "Pesantren Sains: Epistemology Of Islamic Science In Teaching System," *Journal Walisongo*, vol. 2, no. 23 (2015): 280.

5 Christopher A Furlow, "Islam, Science, And Modernity: From Northern Virginia To Kuala Lumpur," *Dissertation of The University Of Florida*, 2005, 84, http://etd.fcla.edu/UF/UFE0012881/furlow_c.pdf.

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dealing with Sunnah, re-researching Islamic heritage, and the last discourse dealing with the intellectual heritage of the West.

Many Muslim scholars who examine the Islamization of knowledge, for examples: Ismail Raji al-Faruqi, Syed Muhammad Naquib al-Attas, Fazlur Rahman, Ziauddin Sardar, M. Quraish Shihab, Kuntowijoyo, and many more. All of them have been seeking for a discourse about science Islamization on a different perspective.

M. Quraish Shihab[6] discussed the relationship between Qur'an and science, not examined by how many branches of science knotted in it, not also by showing the truth of scientific theories. But the discussion should be put on a more appropriate proportion that corresponds to the purity and sanctity of the qur'an and in accordance with the logic of science itself. There's no need to see whether there is math, vegetation science, computer science etc. in the Qur'an. The more important thing, according to M. Quraish Shihab[7] was to see if there was the soul of verses blocking the progress of science or vice versa. And is there one verse of Qur'an conflicting the results of scientific discoveries that have been established? Different statement but almost the same was delivered by Kuntowijoyo.[8] He said that indeed, qur'an provides enormous possibilities to serve as a way of thinking. This way of thinking was called paradigm of the qur'an, Islamic paradigm. The development of science experiments based on the paradigm of qur'an will obviously enrich the horizon of science. Those activities may be driving to the emergence of alternative sciences. It is clear that the qur'anic normative premises can be formulated into empirical and rational theories. Transcendental structure of qur'an is a normative and philosophical ideas that can be formulated into a theoretical paradigm. It will provide a framework for the growth of original, empirical and rational science, which is appropiate with the pragmatic needs of mankind as Caliphs on Earth. That is why the development of theories of knowledge of Islam is meant for the benefit of Muslims. Kuntowijoyo[9] stated that the core of the integration is an effort to unite (rather than just combining) revelation of God and the findings

6 M. Quraish Shihab, *Membumikan Alquran*, Cet. I (Bandung: Mizan, 1992).
7 *Ibid.,*
8 Kuntowijoyo, *Islam Sebagai Ilmu*, Cet. II (Jakarta: Teraju, 2005).
9 *Ibid.,*

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of the human mind (integralistic studies), not excommunicated the Lord (secularism) or isolating human (other worldly asceticisme). The Model of integration is by making the qur'an and the Sunnah as the grand theory of knowledge, so the qauliyah and qauniyah verses can be used.

The emergence of 'Islamic Education movement' was a response to the 'Secular' Education faced by the Ummah (muslim people) around the world. In the sense that 'traditional' Islamic knowledge rooted in Islamic sources i.e. Quran (Holy Book) and as-Sunnah (prophetic tradition) has been marginalized. Furthermore, the Muslim clerics have made a serious attempt to define the concept of Islamic education and then developed a model of the true Islamic education based on 'the basic principles of belief at-tawheed' (principles of faith). This educational reform has been imagined to produce a new generation of Muslims, who are capable of fulfilling the role as the khalifatullah (Khalifah of Allah) for example, is responsible for the development and maintenance of civilization and resources. In other words, Islamic education is obliged to deal with the overall development of the individual, that is imaginative, intellectual, spiritual, physical, scientific, linguistic, both individually and collectively. In short, the end of Islamic education will be embodied to a complete surrender to God at individual level, society and humanity in general.[10]

This research used a text-study method on the existing curriculum at two pesantren (boarding schools) that integrated Islam and science. They were SMA (senior high school) Trensain Sragen and SMA (senior high school) Trensain Tebuireng Jombang. The reviewed texts were the existing curriculum in each web address as follows:

Table 2. Web Address of Research Location

SMA Trensain Sragen	SMA Trensain Tebuireng Jombang
http://www.smatrensains.com/	http://www.smatrensains.sch.id/

[10] Solehah Yaacob, Madame Rahimah, and Embong, "The Concept Of An Integrated Islamic Curriculum And Its Implications For Contemporary Islamic Schools," *OIC, ISESCO and The Ministry Education of Islamic Republic Iran*, papers in the International Conference in Islamic Republic of Iran (February 20, 2008).

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The data collection was conducted by using the existing documents in the web of both institutions and the validity of the data was by using the internal validity in data on the web. This research data analysis used descriptive qualitative techniques.

Integration of Islam and Science in Science pesantren (Trensain)

Indeed, both institutions - SMA Trensain Sragen dan SMA Trensain Tebuireng Jombang - were newly established. But the experiments conducted are incredible. These great efforts are combining the traditions of pesantren that master religious knowledge with the mastery power of nature science. The overview of history is in the following table:

Table 3. The History of Research Location

SMA Trensain Sragen (Sragen science pesantren)	**SMA Trensain Tebuireng Jombang** (Tebuireng science Pesantren Jombang)
Sragen science pesantren was established by Agus Purwanto, D.Sc (Physical Theory Scientist, an alumnus of Hirosima University, Japan) and a lecturer of Physical Theory in ITS Surabaya together with Muhammadiyah. It was lauched on 1 Muharram 1435 H/ 5 November 2013	Tebuireng Jombang science Pesantren was initiated since 2013 by Agus Purwanto, D.Sc (Physical Theory Scientist, an alumnus of Hirosima University, Japan) and a lecturer of Physical Theory in ITS Surabaya together with KH. Salahudin Wahid

The table above shows that both institutions are in cooperation with the same person, Dr. Agus Purwanto a Physical Theory Scientist, an alumnus of Hirosima University, Japan and a lecturer of Physical Theory in ITS Surabaya. The difference only lies in the institutions they are having cooperation with. They are the largest religious institutions in Indonesia: NU and Muhammadiyah. This phenomenon is interesting because the model of science pesantren (trensain) dilutes the categorization of a boarding school typologies which has been formed so far. The typologies are salaf, modern and independent. Trensain type combines all three typologies simultaneously with the superiority by making al-Quran and al Hadith as the basis for the development of nature science, so that qualified students in science and competent in religion can be produced. The superiority is delivered in the vision of the institution, as the following description:

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Table 4. The Vision of the Institutions

Vision	
SMA Trensain Sragen	**SMA Trensain Tebuireng Jombang**
The inception of generation that strongly holds the Qur'an and as-Sunnah, loving and developing science, and having philosophical depth and nobleness of morality	The inception of generation that strongly holds the Qur'an, loving and developing science, and having philosophical depth and nobleness of morality

The vision of both institutions has a similarity in terms of the statement. It is only different in the statement of As-Sunnah which is only mentioned in Trensain Sragen. The vision statement shows two fundamental things, they are the basis of Islam: the Qur'an and the Sunnah and the basis of philosophical depth. These two forces are to support the implementation of science and Islam integration which is reflected in loving and developing science as well as nobleness of morality.

The vision above is in accordance with the opinion of Steiss[11] saying that vision statement should present an image that guides towards success, consistent with the values of the organization and should be realistic and credible, but ambitious and responsive to the changes, challenging and inspiring people in the organization. The description in order to achieve the vision can be described as follows:-

Table 5. The Indicator of Institutional Vision

Indicator of Vision	**SMA Trensain Sragen**	**SMA Trensain Tebuireng Jombang**
Success	The inception of generation that strongly holds the Qur'an and as-Sunnah	The inception of generation that strongly holds the Qur'an
Consisten with the values of the organization	Nobleness of morality	Nobleness of morality
ambitious and responsive to the changes	Loving and developing science	Loving and developing science
challenging and inspiring	Having philosophical depth	Having philosophical depth

[11] Alan Walter Steiss, *Strategic Management for Public and Nonprofit Organizations* (New York: Marcel Dekker, 2003), 63, http://www. dekker.com.

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It seems that the indicators based on Steiss' opinion[12] above lead both institutions to have a clear direction in achieving the goals. Besides, the vision compiled shows a clear distinction compared to the pesantren or an equivalent education. This vision was revealed in a concord mission, as in the following table:

Table 6. The Mision of the Institution

Mision	
SMA Trensain Sragen	**SMA Trensain Tebuireng Jombang**
1. Organizing the educational process that imparts an understanding and passion for the Qur'an and as-Sunnah 2. Providing the environment for the development of scientific attitude, philosophical and logical thinking, responsive and comprehending nature either material or immaterial with a variety of phenomenon 3. Delivering students to pursue a higher education in science.	1. Organizing the educational process that imparts an understanding and passion for the Qur'an and as-Sunnah 2. Providing the environment for the development of scientific attitude, philosophical and logical thinking, responsive and comprehending nature either material or immaterial with a variety of phenomenon 3. Delivering students to pursue a higher education in science.

Both institutions have the same statements of the missions, which try to derivate the vision. The missions stated above have introduced products and the targeted market. These missions are in line with Hunger's and Wheelen's opinion[13] stating that a mission statement clearly states the organization's primary products and markets. Obvious vision statement that clearly states the primary organization's product and market. If in the vision of SMA Trensain Tebuireng Jombang states that the base of education is only Al-qur'an then in the mission is added by As sunnah/al hadist. The following table shows the similarity of the description:

[12] Steiss, *Strategic Management for Public and Nonprofit Organizations*.
[13] J. David Hunger and Thomas L Wheelen, *Essentials Of Strategic Management* (Boston: Prentice Hall, 2010), 24.

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Table 7. The Similarity of Mission

Category	Description of category
Theology foundation	Students' understanding and love towards al-Qur-an and al-Hadits
Philosophy foundation	The growth of scientific attitude, logical-philosophy thinking and responsive and comprehending nature both material and immaterial
Implementation of both foundations	Delivering students to pursue higher education in science area

The direction of both institutions' missions is stated in the third point which is delivering students to pursue higher education in science area. This third mission can be concretely portrayed in the statement of goals of both institutions.

Table 8. The Goals of Institutions

Goals	
SMA Trensain Sragen	**SMA Trensain Tebuireng Jombang**
1. Creating graduates ready to pursue higher education in nature science area 2. Creating graduates who have competencies in nature science, al-qur'an, and Arabic language 3. Creating muslim cleric cadres specialized in the verses of the universe 4. Becoming the referenced institution in Islamic science implementation of education 5. Becoming the center institution of Islamic science research and Islamic civilization	1. Developing students' knowledge through a deep study, scientific research, and scientific experiments 2. Developing students' skills in language, physical usage, chemistry, biology, astronomy, etc, in understanding and revealing the secret of the universe 3. Confirming attitude towards the power of Allah swt who has created the universe with all the things in it through physical approach, chemistry, biology, and other knowledge

The goals of both institutions above are started to be different. The differences can be seen clearly from the result of individual and institutional goals that are very measurable. While the result of goals of Trensain Tebuireng Jombang is more normative and focus on individual level related to the knowledge, affection, and skills. The goals above are detailed into curriculum with the following profiles:

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Table 9. The Profile of Curriculum

The Profile of curriculum	
SMA Trensain Sragen	**SMA Trensain Tebuireng Jombang**
1. Curriculum of interaction unification 2. Subject of curriculum with students in 24-hour activities in pesantren	1. Adopting national curriculum, pesantren and Cambridge 2. Implementing the universal curriculum concept (unification)

The comparison shows that both institutions have the same direction in achieving the goals through the curriculum. There are two things that become references in arranging the curriculum which are pesantren and curriculum of unification. The difference point is additional reference of curriculum in Trensain which is Cambridge curriculum. To achieve the goals and in order to be in line with the profiles, generally the curriculum in both institutions can be divided into three main components:

1. Material of al-Qur'an/curriculum of al-Qur'an
2. Material of science/curriculum of science
3. Material of language/curriculum of language

Those materials are still bound with interaction pattern of all subjects of the curriculum in 24-hour pesantren activities. Concrete description of the curriculum is as follow:

Table 10. Materials of Religious Study in SMA Trensains Sragen

No.	**Material**	**SMA Trensain Sragen**	**SMA Trensain Tebuireng Jombang**
		Lessons	
1.	Al Quran and Hadis	Study of Al-Quran	*Ulumul Qur'an*
		Tafsir Kauni	Al Qur'an and science I, II, III, IV
		Study of Hadis	*Ulumul Hadits, Hadits Ahkam*
		Tajwid and Tahfidz (memorizing kauniyah verses)	-
2.	Another Islamic Study	*Aqidah*	*Aqidah*
		Tarikh	*Tarikh*
		Fiqh dan *Ushul Fiqh*	*Ushul Fiqh*
		Kemuhammadiyahan	*Aswaja*
		Study of Falak (astronomy)	-

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The comparison shows that in Trensain Tebuireng Jombang, the curriculum of al-qur'an and hadist and derivative lesson is more in number than the curriculum in Trensain Sragen. Even the material of al-qur'an and science I, II, III, IV is given in Trensain TebuirengJombang. But there is a strengthening of *tahfidz of kauniyah* verses in Trensain Sragen.

The description above shows an effort of balancing the mastery of science and the faith strengthening. The next difference is laid on the center of Islamic organization. The difference is in only two materials, that are:

Table 11. The Difference of Material

Institution	**Affiliation**	**Lessons**	
SMA Trensain Sragen	Muhammadiyah	*Kemuhammadiyahan*	Study of Falak
SMA Trensain Jombang	Nahdlatul 'Ulama	*Ahlussunnah Waljama'ah* (Aswaja)	–

The students in Trensain Sragen get the subject *Kemuhammadiyahan* and study of *Falak* because it is affiliated to Muhammadiyah. Meanwhile due to its affiliation to Nahdlatul Ulama, the students in Trensain Tebuireng get *Ahlussunnah Waljama'ah (Aswaja)* subject. This is not a principle difference because it's only try to confirm the affiliation of the educational institutions.

The lessons displayed above can be strengthened when the students master Indonesian and foreign language, Arabic and English. The mastery of Arabic, Indonesian, and English (reading, listening, speaking, and writing) can strengthen students in mastering the content independently by themselves. It is because language study becomes a tool to understand classical and contemporary texts related to science material or other knowledge. Language study given in both institution is described in the following table:

Table 12. Linguistics material of SMA Trensains Sragen dan Tebuireng Jombang

No.	**Material**	**SMA Trensain Sragen**	**SMA Trensain Tebuireng Jombang**
			Lessons
1.	Language	Arabic	Arabic
		English	English
		Indonesian	Indonesian

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The mastery of this tool knowledge is very important since it becomes a main factor in understanding primary books of science. It is confirmed by Mujamil Qomar's [14] opinion saying that mastery skill of this tool knowledge is intended to be a pre-condition in understanding another material. Material comprehension of Islamic study is through Arabic mastery, while the material of scientific study can be strengthened through English mastery. This language mastery (reading, listening, speaking, and writing) is more powerful since both pesantren use guidance model in a foreign language environment for 24 hours.

In accordance with the vision mentioned before, both institutions want to achieve the vision by giving scientific material and the philosophy. The description is as follow:

Table 13. Scientific Material and Philosophy in SMA Trensains Sragen dan Tebuireng Jombang

No.	Material	SMA Trensain Sragen	SMA Trensain Tebuireng Jombang
		Lessons	
1.	Natural Science	Math	Math
		Physics	Physics
		Biology	Biology
		Chemistry	Chemistry
		Study of *Falak*	-
2.	Philosophy of science	Philosophy of science 1	Philosophy of science 1
		Philosophy of science 2	Philosophy of science 2

There's no flashy difference in the lesson category related to the achievement of vision, mission, and the institution's goals. What is interesting is that the senior high school students have got science phylosophy lesson. It becomes a great distinction compared to other similar education institutions. Maybe both institutions are the only institutions in high school level in Indonesia which teach science phylosophy. Mostly, science in high school level of education is taught without science phylosophy lesson.

[14] Mujamil Qomar, "Meneguhkan Profesionalisme Guru PAI: Sebagai Penggerak Kemajuan Ummat" (Paper in FITK UIN Maliki Malang Seminar, UIN Maliki Malang, 2015).

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The list of lessons portrayed above shows that the experiment of integrating Islam and science is very fundamental. The review contains phylosophy and rules of Tauhid (Qur'an and Sunnah) as well. It can be seen from the basic lessons related to the science framework of phylosophy, al-qur'an and science, and also hadist and science, supported by foreign language materials. The comparison of lessons among both institutions shows seriousness in order to integrate Islam and science, especially science of nature.

Both reviewed schools are trying to create graduates who have the following profiles:

1. Fluent in foreign languages (English and Arabic)
2. Good at science
3. Math
4. Physics
5. Chemistry
6. Biology
7. Understand the interaction between religion and science
8. Al-Qur'an (especially kinds of *tafsir, tafsir bil ilmiy, tafsir ilmiy*)
9. Science (introduction to science, history, biography of scientists)
10. Phylosophy (introduction to phylosophy, meaning, characteristics, and fuction, history of phylosophy)
11. Phylosophy of science
12. Science and problems of God (scientific materialism, old science, new science)
13. Religion and science (trend of review, ind of relationship)
14. Islam and Science (science Islamization, Islamic scientification, Islamic science)
15. Wolfram math

The profiles of graduates are oriented to be muslim generation who have strong understanding in Islam and science. It's implemented through unification curriculum (integration of Islam and science) that elaborate three elements: religion, science, and skills. In the implementation, all materials are integrated to 24-hour activities. In developing science, students are equipped with two main languages: Arabic and English. They are continioned to stay in the pesantren for 24 hours. This is to ease the development of the science both passively or actively.

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The curriculum above shows that science pesantren (Trensain) is different from the result of Lukens-Bull's study. [15] Pesantren curriculum has become a focal point in the strategy of the traditionalist community to encounter globalization. On the contrary, the curriculum of Trensain is in line with the globalization and in accordance with the development of science that is less studied by muslim so far.

Conclusion

Education in science pesantren (Trensain) in Sragen and Jombang is a form of creativity in order to integrate Islam and science as well as combining a model between school and pesantren. The framework of integration refers to the normative power (Qur'an and Sunnah), phylosophical power, strenghtening the mastery of science, and the power of foreing language mastery. This is an integrative transformation way of understanding ideas, action, and awareness to reduce secularim.

[15] Ronald A Lukens-Bull, "Teaching Morality: Javanese Islamic Education In A Globalizing Era," 1998, http://web.ff.cuni.cz/ustavy/usj/jais/v003/lukens1.pdf.

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