Harmonizing Religious Science and Technology Through Boarding School System: A Case at a State Islamic Senior High School

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Abstract
The increased number of Islamic educational institutions in Indonesia, which has not been matched by an improvement in education quality, is the impetus for this study. There are still several Islamic educational institutions that have not been able to adequately integrate religious knowledge with science and technology. This is the objective of the boarding school program of the State Islamic Senior High School (Madrasah Aliyah Negeri) Insan Cendekia Pekalongan. This study seeks to present the implementation model of student activity programs based on scientific harmonization at MAN Insan Cendekia Pekalongan boarding school. Field research was utilized in this qualitative research design. This study's informants include the Head of Madrasah, the Deputy Head of Curriculum, the Deputy Head of Student Affairs, the Deputy Head of Dormitory, and students in the tenth grade. The researcher obtained information via interviews, observations, and documentation. In the meanwhile, the researcher verified the accuracy of the data by triangulating data sources, observers, and hypotheses. The data is then evaluated using reduction techniques, presentation, and data verification. According to the findings of this study, the implementation of student activity programs via the boarding school system at MAN Insan Cendekia Pekalongan adopts a separated integration system (SIS) paradigm.

Keywords: Harmonization of science, religion, science, technology

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Introduction
In the context of science, the dichotomy is better understood as the scientific separation between religious science and general science that separates religious consciousness and knowledge. An Islamic education system that applies the dichotomy of science will lead to the outbreak of Islamic civilization and will deny the kaffah and universal Islam civilization. In its development, the scientific dichotomy will have implications for the educational model. On the one hand, there is an education that only deepens modern and dry science of religious value. On the other hand, some education only deepens religion separate from the development of science (Mustaqim, 2015).
The problem of the dichotomy of science, efforts are needed to harmonize science (religion and science) as something very important, because ignoring religious values in the development of science and technology will have a tremendous negative impact on the socio-humanitarian level and the universe. Sciences play an important role for humans in living their life and technology. The emergence of public schools and religious schools is a concrete manifestation of the dichotomy of science in Islamic education. This dichotomy then gave birth to a pattern of educational stratification, in which Islamic education was positioned at a lower level. This has resulted in a weak bargaining position of Islamic education so that the perception of Islamic education becomes worse. This assumption is not only born by society but also by the government. The umbrella of Islamic education through the Ministry of Religious Affairs has an impact on the consequences for facilities and budgets. Thus, the quantity of extraordinary madrasa education is not proportional to the quality of management and output (Mustaqim, 2015).

Then to know the dichotomous practice of science in Islamic education, there is a study on literature or textbooks used in learning in madrasah aliyah. The results of the study found that the dichotomy of science still colored the science taught in madrasah aliyah. At some level, it is expressly distinguished between general science and a religious science. Religious Science is considered a sacred and important science, while general science is considered unholy and less important. Another thing that led to the birth of this dichotomy was the disproportionate understanding and implementation of the meaning of worship and the variety of activities that can be categorized as worship as well as an understanding of theological doctrines/ aqidah. Departing from this understanding, the knowledge that is considered important and needs to be taught to students is a science that is directly related to how a person can perform worship rituals in the right way and is based on correct beliefs. In addition, this knowledge is considered less important because it is considered to have no direct relationship with worship (Supa'at, 2011).

Then to answer people's doubts about the quality of madrasah aliyah and the problem of the dichotomy of science, the Ministry of Religion developed several superior madrasah models, one of which is MAN Insan Cendekia which has the aim of developing special madrasah education in the field of science and technology that has intellectual, emotional, spiritual and social intelligence with a boarding school model. One of its main missions is to provide an educational model that practices an integrated approach between religious science, science, technology, environment, and society with a learning climate that is pleasant, inspiring, mutually supportive, and respectful (Kemenag: MAN IC, Madrasah Pioneer of Integration of Religion and Science, n.d.).

The presence of MAN Insan Cendekia Pekalongan is expected to be able to combine religion, science, and technology. With this integration, MAN Insan Cendekia Pekalongan is expected to be a pioneer in efforts to eliminate the dichotomy of Islamic science and place Islamic ethics based on the universal values of the Qur'an Hadith to animate all scientific fields taught. This integration is expected to give birth to MAN Insan Cendekia graduates who are a strong belief or aqidah, broad knowledge of their religion and their thinking (History – MAN Insan Cendekia Pekalongan, n.d.). MAN Insan Cendekia Pekalongan has a vision, mission,
and goals that are closely related to the concept of integrating science as a scraper of scientific dichotomy (Vision and Mission – MAN Insan Cendekia Pekalongan, n.d.).

With various achievements and efforts to implement integrative Islamic education at MAN Insan Cendekia Pekalongan, researchers are very interested in researching how exactly the implementation of the harmonization of religious science and technology applied in MAN Insan Cendekia Pekalongan through the boarding system at the school.

**Methods**

The implementation of harmonization of religious science and science technology To obtain information about applied in MAN Insan Cendekia Pekalongan through its boarding school system, the research used by researchers is field research (field research ) with a qualitative approach (qualitative research). The discussion in this study used descriptive techniques. Primary data sources include direct information from research subjects/informants which include the Head of Madrasah, Deputy head Curriculum, Deputy head Student Affairs, Deputy head Keasramaan, and eight students drawn randomly proportionally from class X MIPA and IPS. Meanwhile, secondary data includes written documents about madrasah profiles, activity schedules, student programs, and curriculum structures at MAN Insan Cendekia Pekalongan.

Researcher in collecting data used interview, observation, and documentation methods. As for the validity of the data, researcher used triangulation techniques which include triangulation of data sources by comparing interview results, observation results, written documents, archival documents, and images/photos about the implementation of harmonization of religious science and technological science applied in MAN Insan Cendekia Pekalongan through the boarding school system. For triangulation of observers, researcher asked for the help of related parties to examine data related to the implementation of education based on the harmonization of religious science, science, and technology at MAN Insan Cendekia Pekalongan. In triangulation of theories, researchers explore and compare various theories of integration of science and integrative education to implement the harmonization of religious science, science, and technology in MAN Insan Cendekia Pekalongan.

The data analysis process was carried out by researcher using an interactive model proposed by Miles and Huberman (Idrus, 2009) through data reduction, where the researcher only selects data on student activity programs related to the implementation of Islamic education based on the harmonization of religious science, science, and technology at MAN Insan Cendekia Pekalongan through the boarding school system. Then the data is presented by the researcher in the form of narratives, charts, drawings, and diagrams, which then the data will be verified to provide conclusions regarding the implementation model of harmonization of religious science, science, and technology in MAN Insan Cendekia Pekalongan through the boarding school system.

**Results**

**Harmonization of Religious Science, Science, and Technology**

Harmonization comes from two syllables, namely, harmony which means harmony/harmony ( KBBI Daring, n.d.), and the suffix ‘ization’ which is the result of the absorption of foreign vocabulary –ization into –meaningful ‘ization’ indicates a process or stage that occurs. So that harmonization can be interpreted by a stage or process to align
something with another. So the harmonization of science can be interpreted with stages/processes to align a scientific field with other different scientific fields. Efforts to harmonize various scientific fields in the study of Muslim scholars have many concepts and understandings, such as the use of the word integration and Islamization of science.

Integration comes from the English Integrate, Integration which was later adapted into Indonesian into integration which means to merge, merge (Jhon M Echols, 2003). In Indonesia, integration is defined as intermingling, combining, and uniting until it becomes a whole or round unity. Along the way, the thought of the integration of science between several figures and institutions of study around the world experienced various paradigm differences ranging from the naming of terms (editorial diversity) to models and procedures for their integration. One of the most popular terms used in the context of the integration of religious science and general science is Islamization.

Some of the thoughts of figures who have discussed the integration/Islamization of science are as follows:

1. Ismail Raji al-Faruqi (1921-1986), according to him, the prerequisites for eliminating the dualism of the education system and the dualism of life and to find solutions to the problems faced by the people, the existing science must be Islamized. In the Islamization of science must observe several principles that are the essence of Islam (Al-Faruqi, 1984).
2. Kuntowijoyo said the essence of integration is an effort to unite (not just combine) God's revelation and human findings (integralistic sciences), not to excommunicate God (secularism), or to ostracize man (other-worldly asceticism) (Kuntowijoyo, 2005).
3. Amin Abdullah, with his concept of integration-interconnection, is a trend for the academic community in developing scientific disciplines both at the basic education level to higher education. The integration-interconnection paradigm wants to show that between different scientific fields there is a relationship with each other, indeed what the entire scientific discipline aims at is the reality of the same universe. It's just that the dimensions and focus seen by each scientific discipline are different (Abdullah, 2006).

According to Abuddin Nata, the process of integrating science in the implementation of Islamic education is contained in three models of Islamization of knowledge, namely: purification model, Islamic modernization, and neo-modernism (Nata, 2005a). In addition, there are also several models of science integration as written by Syahrullah citing Jamal's writings in the journal Islamedia, namely the IFIAS (International Federation of Institutes of Advanced Study) scientific integration model, a model developed by the Malaysian Islamic Academy of Sciences (ASASI), the Islamic worldview model, Islamic Knowledge Structure (SPI) model, bucaillism model, classical philosophy-based scientific integration model, Sufism-based scientific integration model, fiqh-based scientific integration model, ijmali group model (ijmali group) and Aligarh group model (Aligarh group) (Iskandar, 2016).

Amin Abdullah explained the scheme of integration of knowledge through the spider web, while Imam Suprayogo explained the integration of science through the scientific building of the tree model described as follows;
In terms of science, each branch of science has several different concepts, characteristics, methodologies, and ways of development and delivery. Likewise, Islamic religious science, science, and technology are certainly based on different bases because the three of them have different characteristics and fields of study. Although the three of them have a relationship and can be integrated. To better understand the basic concepts of the three branches of science, you can explain them with the following chart:

The Qur'an, Hadith → Natural/social phenomena → Human needs

ISLAM

Doctrine, absolute

Scientific, flexible

Applied, thriving

Life guidance

Forming a theory

Shaping civilization

The above has the following meanings; Agama Islam serves to regulate the reciprocal relationship between man and Allah, a man with others, and the living environment that has physical, social, and cultural benefits. Al-Qur'an is a holy book that contains ethical, moral, moral, and wisdom instructions and can also be a theology of science and the grand theory of science (Abdullah, 2004). As Allah says in Sura al-Kahfi verse 109.

قُلْ لَّوْ كَانَ الْبَحْرُ مِدَادًا لَّلَّذِي كَانَ مَدَادًا لِكُلِّ مَدَادٍ لَّفَّلَأَ نَفِدَ كَلِمََٰتِ رَبِّي وَلَوْ جِئْنَا بِمِثْلِهِ مَدَادًا

It means: "Say: if the ocean becomes ink to (write) the sentences of my Lord, truly the ocean runs out before (written) the sentences of my Lord are finished, though we bring in as many extras (also)" (Religion, n.d.).
Science, derived from a natural science which is usually referred to as Natural Sciences (IPA) is a set of cognate sciences consisting of biology, physics, chemistry, geology, and astronomy and seeks to explain every phenomenon that occurs in nature (Hamdani, 2011). Science also means systematic science in nature and the physical world. Science is obtained from the results of observations, research, and trials that lead to the determination of the basic properties or principles of something being investigated and studied (Khun, 2012). Science-based reasoning and scientific data are experiencing a faster development than Islamic religious sciences. This science is divided into three parts namely:

1. Naturalist science, in the form of nature and physical such as physical sciences, biology, medicine, astronomy, and so on.
2. Sociological science, in the form of human social behavior such as sociology, politics, anthropology, education, communication, psychology, and so on.
3. The science of reasoning, in the form of philosophical reasoning such as philosophy, logic, art, and so on (Nata, 2005b).

The assumption of Muslims that science originating in western countries is considered secular knowledge so must be rejected as incorrect. Because science is the result of man's reading of the verses of Allah Swt. Science will cause problems if science loses its spiritual dimension because it can cause catastrophes that harm humans (Mustansyir, 2002).

Technology is the result of the application of science which has a major influence on human life (Subandi, 2012). Technology is a part of science that develops independently and creates a world of its own. However, technology is impossible to develop without being based on solid science. Thus science and technology became an inseparable whole (Joseph, 2000).

Discussion

Harmonization of Religious Science, Science, and Technology through the Boarding School System

To realize a harmonious academic culture between religious science, science and technology can be observed through various programs of activities scheduled by madrasah managers as representatives of these scientific harmonization efforts. Meanwhile, efforts to actualize the harmonization of the three scientific fields in the form of student activity programs can be done by taking the main values and elements contained in the three scientific fields. Academic culture or culture that harmonizes religious science, science, and technology can be observed through the schedule of madrasah activities and hospitality as well as student programs at MAN Insan Cendekia Pekalongan which implements a boarding school system. Based on the schedule of the MAN Insan Cendekia Pekalongan activity program obtained from the Waka Curriculum work document and the results of interviews with Waka Curriculum and Waka Keasramaan, and based on the results of observations of madrasah activities and dormitory it was found that MAN Insan Cendekia Pekalongan as a madrasah with a boarding school model has a schedule of activities that set for 24 hours a day overnight and 168 hours a week. The activities contained in teaching and learning in the classroom, are carried out from Monday to Friday with an average of seven to eight hours a day. While the remaining 16-17 hours are routine student activities within the scope of hospitality which include religious activities, academic guidance, student assistance, rest, and so on. The recap of the time allocation of research student activities is presented in the form of the following table;
Table 1 Activity Schedule at MAN Insan Cendekia Pekalongan

<table>
<thead>
<tr>
<th>No.</th>
<th>Types of Activities</th>
<th>Monday-Thurs</th>
<th>Friday</th>
<th>Saturday</th>
<th>Sunday</th>
<th>Time Allotment</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Religious</td>
<td>± 5 hours</td>
<td>± 6 hours</td>
<td>± 5 hours</td>
<td>± 3 hours</td>
<td>30 ± 36 hours</td>
<td>Qiyamul lail, compulsory prayers and Friday congregations, kultum, qiraah, tahfidz qur'an, reading book.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 minutes</td>
<td>15 minutes</td>
<td>15 minutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Academic</td>
<td>± 1 hour</td>
<td>± 1 hour</td>
<td>± 30 minutes</td>
<td>± 45 minutes</td>
<td>15 ± 30 minutes</td>
<td>National Science Olympiad /School Science Competition guidance, muhadharah (thematic discussion), muhadatsah (speaking).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>± 30 minutes</td>
<td>± 45 minutes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Teaching &amp; Learning</td>
<td>± 7 hours</td>
<td>± 6 hours</td>
<td>± 30 minutes</td>
<td>± 45 minutes</td>
<td>± 36 hours</td>
<td>Teaching and learning activities in the classroom</td>
</tr>
<tr>
<td></td>
<td></td>
<td>± 30 minutes</td>
<td>± 45 minutes</td>
<td></td>
<td></td>
<td>± 45 minutes</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Mentoring</td>
<td>± 1 hour</td>
<td>± 2 hours</td>
<td>± 6 hours</td>
<td>± 4-hour</td>
<td>± 16 hours</td>
<td>Mentoring foster teachers, counseling guidance, clinic programs, activities, and self-study.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>± 45 minutes</td>
<td>± 45 minutes</td>
<td></td>
<td>± 15 minutes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Break</td>
<td>± 8 hours</td>
<td>± 7 hours</td>
<td>± 8 hours</td>
<td>± 9 hours</td>
<td>± 59 hours</td>
<td>Eating, taking bath, sleeping, hygiene, and other personal needs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>± 30 minutes</td>
<td>± 45 minutes</td>
<td></td>
<td>± 45 minutes</td>
<td>± 30 minutes</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Extra-curricular</td>
<td>-</td>
<td>-</td>
<td>± 2 hours</td>
<td>± 30 minutes</td>
<td>± 2 hours</td>
<td>Scouting and specialization</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>± 30 minutes</td>
<td></td>
<td>± 2 hours</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Sports</td>
<td>-</td>
<td>-</td>
<td>± 1 hour</td>
<td>± 15 minutes</td>
<td>± 1 hour</td>
<td>Parent visits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>± 15 minutes</td>
<td></td>
<td>± 1 hour</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Cruise</td>
<td>-</td>
<td>-</td>
<td>± 7 hours</td>
<td>± 15 minutes</td>
<td>± 7 hours</td>
<td>Parent visits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>± 15 minutes</td>
<td></td>
<td>± 7 hours</td>
<td></td>
</tr>
</tbody>
</table>

Based on the results of the recapitulation table above, it was found that student rest activities had the most time allocation ± 59 hours 30 minutes for one week, followed by KBM activities ± 36 hours and 45 minutes from Monday-Friday. Then religious activities occupy the third position with an allocation of time ± 36 hours a week with an average per day of five to six hours on Monday-Saturday. As for facilitating the comparative analysis of the large percentage of time allocation from the activity program at MAN Insan Cendekia Pekalongan, it can be described through the following diagram;
Figure 4 Percentage of time allocation of activities of MAN Insan Cendekia Pekalongan students

The diagram above can be used to illustrate an integrative academic culture by using the integration of religious science, science, and technology into the program of activities at MAN Insan Cendekia Pekalongan. Based on the diagram, it was found that religious activities which are representations of religious sciences by 22% are balanced with the activeness of KBM of 22% which is dominated by science. Meanwhile, academic activities of 4% as a support for science provide added value and strengthen the position of MAN Insan Cendekia Pekalongan madrasah which wants to produce Islamic scientists.

Meanwhile, to empower and increase the potential of students in an integrative culture, MAN Insan Cendekia Pekalongan organizes various student activities using the short harmonization of religious science, science, and technology. As for the types of student activities at MAN Insan Cendekia Pekalongan which can be associated with religion, science, and technology-based on the work documents of Waka Kesiswaan, the results of interviews with Waka Kesiswaan and Waka Kearsamahan and based on observations of student rhythmic activities, researchers summarize in the form of the following table:

Table 2. Student activities that contain elements of religion, science, and technology MAN Insan Cendekia Pekalongan

<table>
<thead>
<tr>
<th>No.</th>
<th>Religion</th>
<th>Science</th>
<th>Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Majlis shalawat, turats studies, PHBI, tajwid qur'an hadith, compulsory prayer congregation, qiymul lail, qiraah</td>
<td>Guidance of scientific papers, coaching of National Science Olympiad and School Science Competition</td>
<td>English and Arabic kultum, muhadloroh, thematic discussion, career day, collaborative study, morning apple, student care, English Arabic camp</td>
</tr>
</tbody>
</table>

From the table above, it can be observed that in general, student activities at MAN Insan Cendekia Pekalongan have been specifically mapped according to the main purpose of the activity. Some are focused on religious science and science only, some are trying to harmonize various sciences in the implementation of their activities. However, in the agenda of student activities at MAN Insan Cendekia Pekalongan, there are no activities specifically oriented towards technology development.

Then concerning scientific harmonization, there has not been a single student activity at MAN Insan Cendekia Pekalongan that is explicitly written about efforts to combine agama
science, science, and technology or in the form of Islamic science. Most of the existing student agendas are already focused on one area of activity to be achieved. However, the system of these activities already contains various scientific fields that are summarized in the student activity program at MAN Insan Cendekia Pekalongan. Some activities have certain scientific goals and targets or skills, but in their implementation, they are often interspersed with content from other scientific fields either by including different scientific materials to providing paradigms or ways of thinking multidisciplinary science to students. The pattern of student activities at MAN Insan Cendekia Pekalongan which has the nuances of integrating religious science, science, and technology can be described in the following picture.

![Pattern of student activity system MAN Insan Cendekia Pekalongan](image)

The pattern depicted in the picture above illustrates that the integration model of student activities applied at MAN Insan Cendekia Pekalongan is in the form of connecting and unifying student activity programs with different goals in one system. Therefore, all students are required to participate in such programs of activity. Thus, students will have a multi-disciplinary and multi-talented mindset and skills because students are contained in an integrative madrasa culture system.

From several researchers' analyses confirmed with various data and theories, it was found that the type of thought in developing MAN Insan Cendekia Pekalongan was based on a typology of post-traditionalistic thinking (Mu'ammar, 2013) which was contained in a system of concepts and activity programs that sought to preserve culture, culture and Islamic heritage values based on educational standards in modern times. Then concerning the integration model contained in the culture of student activity programs at MAN Insan Cendekia Pekalongan similar to the integration concept developed by UIN Sunan Kalijaga Yogyakarta initiated by Amin Abdullah with the spider web model and UIN Sunan Gunung Djati Bandung with a scientific wheel model (three-wheel components) (Rifai et al., 2014) because all the different programs are summarized in a madrasa system that goes hand in hand, interrelated and complements and seeks to be dialogued through a dialogical integration model (Riyanto, 2014).
So it was found that the model implementation of student activity programs through the boarding school system at MAN Insan Cendekia Pekalongan uses the separated integration system (SIS) model. This model has the character of aligning various student activities that are different scientific elements and expertise in one boarding school activity system that must be followed by all MAN Insan Cendekia Pekalongan students.

**Conclusion**

Harmonization of science is a stage/process to align a scientific field with other different scientific fields. The harmonization of science in the field of Islamic education aims to eliminate the perspective of scientific dichotomies that are still inherent in the world of Islamic education. Therefore, in the industrial era 4.0 now the world of Islamic education has begun to improve by opening and expanding its scientific paradigm through efforts to harmonize various fields of religious science. Science and technology in designing its vision, mission, and educational goals.

Efforts to harmonize religious sciences, science, and technology at MAN Insan Cendekia Pekalongan are implemented in the boarding school madrasah system which is contained in the separated integration system (SIS) model. In the boarding school education system, student activities are designed for 24 hours using an approach to efficiency and effectiveness as well as special considerations adapted to the vision, mission, and objectives of education that integrate religious science, science, and technology. The typology of post-traditionalistic thinking is used in designing student activities at MAN Insan Cendekia Pekalongan using a dialogical integration model.

**References**


