

# Pre-service Chemistry Teacher's Ability to Integrate Islam and Chemistry

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**Abstract** : Integration of Islam on learning is important in order to form students who are smart and skilled and have a noble character. All of these competencies require a seriously designed and conceptual learning process by a teacher. Pre-service teachers in Islamic Religion College have to possess main ability of subject matter and learning chemistry and also expected to be able to integrate Islamic religion on learning. This study aims to describe pre-service chemistry teacher's ability to integrate Islam in lesson plan and chemistry teaching material. The method used in the research is descriptive and data obtained by portfolio. The results showed (1) pre-service chemistry teacher's ability to integrate Islam in lesson plan of chemistry is good (75%) (2) pre-service chemistry teacher's ability to integrate Islam and chemistry in chemistry subject matter is fair (65%). From this study it is recommended that the government should provide standard guidelines to teach the value of Islam through subjects so that teachers understand how to integrate Islam in chemistry subject. Universities or teaching institution, especially Islamic universities or teaching institution, as producer teachers should developed courses and training so as to print graduates who are able to teach chemistry that integrate Islam. Chemistry teachers and pre-service teachers, especially Muslims, should be active increasing their knowledge of Islamic and chemistry issues and also Islamic integrated chemistry learning to strengthen the argument when linking chemistry and Islam so teacher's explanation more easily accepted by students.

## 1 INTRODUCTION

Integration has the sense of the combination, unification, or pooling, of two or more objects so that becomes a roundness or be whole (Trianto, 2010, p. 35) (Ramli, 2014). Islam knows no separation between religion and general science. In a sense, there is no dichotomy view about science. Both of these must-have science in an integral (Lubis, 2015) (Zainuddin, 2008, p. 46) (Abdullah, 2007, p. 167).

The emergence of Islamic integration is based on the existence of a dichotomistic mindset, arising from the unconscious of the people who still think that Islam and chemistry cannot be integrated because they have different fields of discussion and do not rebuke each other (Zain & Vebrianto, 2017). Al-Quran and al-Sunnah actually do not distinguish between Islamic religion and the general sciences. Al-Quran only knows science and all branches of knowledge in Islam are sourced from one, namely

Allah (Zainuddin, 2008, p. 54). Both of them were separated and seemed to walk in their respective regions. Though chemistry is a branch of natural science (science) that can be integrated with Islam, which nature is God's creation. Allah as the source of knowledge, teaches his knowledge through qauliyah verse (Qur'an and hadith) and kauniyah verse (natural phenomenon) to man (Zainuddin, 2008, p. 157) (Yusuf, 2015, p. 54).

Chemistry is thought to be able to shape the character of students, because the knowledge learned especially by Muslims should be used as a means to get to know God as the creator of the universe and increase faith and devotion to Him. So that chemistry learning can contribute to the formation of positive attitudes such as the objectives of chemistry subjects contained in the Content Standards of chemistry subjects in Senior High Schools / Madrasah Aliyah (MA). One of the goals of chemistry subjects is that students have the ability to form positive attitudes toward chemistry by realizing

the order and beauty of nature and glorifying the greatness of God Almighty (Firman, 2009).

National education aimed at developing the potential of learners became the human of faith and pious to God Almighty, precious, healthy, have learned, accomplished, creative, independent, and become citizens of a democratic and responsible. On Law No. 22 Year 2003 subsection 36, there is meaning that is implied and express regarding integration in subjects for the sake of realizing the goals of national education. Educational units have the authority in the development of the curriculum by observing an increase in faith and piety, improved morals and religion. Aspects of the faith, morals, devotion as well as a new look in the curriculum of the 2013 target entire subjects including Chemistry. Not only that, even these three aspects is the first core competencies to be achieved in all subjects (Yusuf, 2015) (Muslim, et al., 2014) (Ramli, 2014) (Sunhaji, 2016).

Aspects of faith, noble character, and piety are only seen in the 2013 Curriculum which is the target of all subjects including chemistry. Not only that, even these three aspects become the first core competencies that must be achieved in all subjects. The result, of course, is expected to be able to build emotional and spiritual learners (Yusuf, 2015, p. 93). Supporting national education goals, the core competencies formulated in the 2013 Curriculum consist of four competencies, namely spiritual competence, attitude competency, knowledge competence and skill competency. Based on the 2013 curriculum, teachers are required to integrate character education (Islam) into the process of teaching and learning activities (Hadi, 2015).

Integration between Islam and science isn't enough just simply discourse. Based on the decision of the Director General of Islamic Religious Education No. 575 Year 2018, then a Science Competition at the Madrasa (SHGS) attached to Islamic religious materials in science subjects which is contested. Integrated chemistry is one of the areas that are contested on the level of Madrasah Aliyah (MA).

Various activities and acts that were ordered in Islam pertaining to the work of reason (cognitive), feelings (affective), and actions (psychomotor). All activities require a competence of the cognitive, affective, and psychomotor need learning process designed seriously and conceptual, so it's really focused and get optimal results (Nata, 2009).

Implementation of chemistry learning integrated with Islam in class, the teacher must prepare the planning in the process of learning

integrated with religious matter. The planning of learning include learning the preparation of implementation plans (RPP) and the preparation of teaching material (materials) that involves the values of Islam (Zain & Vebrianto, 2017).

The ability of drawing up the planning for pre-service teachers believed was one of the essential competencies. But whether the pre-service teachers already have the capability of integrated planning compilation of learning ability between chemistry and the ability of the religion of Islam (Rochman, 2010). Considering the Permenristedikti Number 44 of 2015, the vision of the Chemical Education Study Program adapts to the characteristics and vision of the Syarif Hidayatullah UIN in the form integration of islamic and general science which is realized through courses that integrate Islam and chemistry in its teaching. Islam and Science courses teach the integration of Islam and Science, especially chemistry to pre-service chemistry teachers. This research aims to know the ability of the pre-service chemistry teacher integrated Islam on learning plans and chemistry teaching material.

## 2 METHOD

Research conducted is a descriptive research. Research conducted is descriptive research. Descriptive research is a research method that is done to find out, describe and interpret the value of an independent variable, either one variable or more with what it is without making comparisons, or connecting between other variables (Sugiyono, 2012, p. 11) (Darmadi, 2011, p. 151) (Trianto, 2010, p. 197). Descriptive research only attempts to describe clearly and sequentially the pre-determined research questions and descriptive research is not intended to test hypotheses. Therefore descriptive research is also called pre-experimental research (Darmadi, 2011, p. 34) (Arikunto, 2007, p. 234).

The unit of analysis in this study is a prospective chemistry teacher who will be measured the ability of integrating Islam and chemistry. Subject of this research are pre-service teachers. Object of this research is ability of integration between Islam and chemistry. Data collection techniques on research using methods of documentation, the portfolio of teaching material and lesson plan votes based rubric assessment portfolio. Quantitative data obtained from an average score of each indicator, analyzed by qualitative descriptive. Qualitative data obtained from the record rater against portfolio of chemistry

lesson plan and teaching material, analyzed by the reduction.

### 3 RESULT AND DISCUSSION

#### 3.1 Result

Participants are the students of the semester of 6 chemistry education class of 2015 UIN Syarif Hidayatullah Jakarta totalling 71 participants on courses the study of Islam and science. Islamic courses and science is divided into two classes, namely class A as many as 33 students and class B as much as 38 students. The requirement for this coursework, all the participants has gained educational courses, chemistry and also the field of religion.

On the subject of Islam and science, participants were assigned to make lesson plan (RPP) and teaching material suitably Based Competency (KD) and chemistry matter has provided. Assessment instruments and teaching materials adapted the RPP instruments used Rochman (2010) in accordance with the criteria on the rubric assessment of teaching material and the RPP.

Pre-service chemistry teacher's ability to make chemistry lesson plan integrated Islam showed by Table 1.

Table 1: The percentage of Integration of Islam on Chemistry Lesson Plan (RPP)

Indicator	Percentage (%)	Category
Completeness of the RPP component	96	Excellent
Formulating chemistry learning objectives related to integration of Islam	75	Good
Outlines briefly the essential matter of chemistry related to integration of Islam	67	Fair
The appropriateness of the use of the method with characteristic of matter or learning objectives	75	Good
Suitability of learning steps with learning objectives related to integration of Islam	75	Good
Formulating evaluation of learning related to integration of Islam	67	Fair
Components of the	78	Good

RPP contains concept of integration of Islam and chemistry		
Suitability of integration learning model with characteristics of matter	65	Fair
Average	75	Good

Average of Pre-service teacher's integrate ability on lesson plan is good (75%). The highest percentage is RPP component (96%) and the lowest percentage is integration learning model (65%).

Pre-service chemistry teacher's ability to make chemistry lesson plan integrated Islam showed by table 1.

Table 2: The percentage of Integration of Islam on Chemistry Teaching Material

Indicator	Percentage (%)	Category
Outlines the essential concepts, principles or theories based on the selected KD	75	Good
Using the chemistry concept that integrated Islam	64	Fair
The relevance between subject matter of integration of Islam and chemistry with indicators set out	68	Good
Formulating values that related with chemistry matter integrated Islam was studied	65	Fair
Formulating positive behaviors and noble characters as <i>amtsal</i> or parable of chemistry matter	55	Fair
Choose and write qauliyah verses (Al-Qur'an and/or hadist) that mutually related or strengthen chemistry matter	64	Fair
Choose and write kauniyah verses (natural phenomenon) that mutually related or	59	Fair

strengthen chemistry matter		
Average	65	Fair

Average of Pre-service teacher's integrate ability on teaching material is fair (65%). The highest percentage is outline of essential concepts, principles and theories (75%) and the lowest percentage is *amtsal* of chemistry concept (55%).

### 3.1.1 Pre-service Chemistry Teacher's Ability to Make Chemistry Lesson Plan Integrated Islam

#### a. Completeness of the RPP components

As many as 71 RPP were analyzed, majority components of RPP were complete include identity of school, formulate of competencies, time allocation, subject matter, learning strategy, learning activities, media, and learning assessment. There were seven incomplete RPP to enter components of the RPP correspond to the criteria (96%). Assesment of learning outcomes are the largest component that are not included in the RPP.

#### b. Formulating chemistry learning objectives related to integration of Islam

Pre-service teachers formulated learning objectives based on KD include attitudes, knowledges, and skills. The learning objectives formulated by the teacher candidates all have included students as elements of the audience and behavior changes of students as an element of behavior. Six RPPs do not formulate the condition elements which are prerequisites or conditions that must be provided so that the learning objectives are achieved. Five RPPs that do not form a degree element which is a measure of the level or level of ability that students must achieve include affective and attitude aspects.

#### c. Outlines briefly the essential matter of chemistry related to integration of Islam

The majority of teacher candidates have been able to briefly describe the learning material containing material facts, concepts, principles and procedures in accordance with indicators derived from the selected basic competencies. In addition to outlines briefly chemistry matter, pre-service teachers also adds Islam matter that will be integrated.

#### d. The appropriateness of the use of the method with characteristics matter or learning objectives

A total of 11 RPP less precise using the method with characteristic of matter or learning objectives. Majority of the 0

RPP is only using speech or discussion method. While the basic competency skills (KD 4) demands the students conduct experiment so that formulated in the learning objectives.

RPP of macromolecules is one example of the RPP with appropriate learning methods i.e. using discussion groups method. KD of macromolecules demands students have the capability of analysis after the learning process.

#### e. Suitability of learning steps with learning objectives related to integration of Islam

The ability of pre-service teachers to draw up integrated chemistry learning steps already good (75%). They are formulated integrated chemistry learning steps, as follow: (1) the preliminary activities opened with greetings and prayers, and then explains the purpose of learning. One of the candidates gave the motivation of student learning through video benefits and applications of integrated matter. (2) the core activities, explaining the subject matter taught in speech or discussion groups. Integration of Islam more delivered on core activities, at the time of delivery of the subject matter. (3) the closing activities, carried out the withdrawal of the conclusion or reflection on learning that is usually placed Islamic values meant to gratitude to The God, then covered with greetings and prayers.

#### f. Formulating evaluation of learning related to integration of Islam

Assessment of chemistry learning that integrates Islam and chemistry using authentic assessment. Learning assessments that integrate Islam and chemistry formulated by pre-service teachers include the affective, cognitive and psychomotor domains. Assessment for the affective domain, some of the assessments in the RPP are carried out by including the basic values formulated in Core Competence 2. Assessment of the cognitive domain can be done on daily assessments, such as daily practice questions and tests that incorporate Islamic religious material into questions. Psychomotor domain assessment is carried out through portfolios, presentations and experiments.

#### g. Component of the RPP contains concept of integration of Islam and chemistry

Pre-service teachers added that integration of Islam and chemistry is explicitly on the components



of indicators, learning objectives, learning activities, and assessment. 21 RPPs incomplete included the concept of Islamic integration in the RPP component. The most component of the RPP that does not contain the concept of integration is the indicator component. Only two RPPs do not contain the concept of Islamic integration in all components.

#### **h. Suitability of integration learning model with characteristic of matter**

Mostly, pre-service teachers used inductification model in their RPP. This model is the integration of learning with teacher invites students to realize the regularity in nature after studying the theories on chemical material so that growing gratitude for God's greatness.

Others use the model verification, corrective, confirmative, similarization, informative and complementation. Model verification as in Petroleum subject matter, students are asked to analyze the process of the formation of crude oil based on the Qur'an. Corrective performed on the history of chemistry subject matter, with the confirmation that chemistry is not derived from the West but was first discovered by muslim scientists. Confirmative, chemistry subject matter proved with relevant Al-Qur'an verse or appropriate for justification, students are asked to find independently with discussions to find the whole concept with the guidance of a teacher. Similarization model mean equating simply chemical concepts with concept of Islam, such as the human equation to the ground. Complementation for example integrating on thermochemistry RPP, doomsday events described in chemistry. It means that the concept of chemistry and the concept of Islam exchanged information so obtained would be understanding and give more value in thicken the sense faithfulness to God. While informative model done by digging and understand information not only from the discipline of chemistry as in RPP reaction rates and equilibrium chemistry.

### **3.1.2 Pre-service Chemistry Teacher's Ability to Make Teaching Material Integrated Islam**

Islami and Science courses provide two integration models that can be used by pre-service teachers to make Islamic integrated chemistry teaching materials, namely the Integration Model of Four Steps Teaching Material Development (4S TMD) and the Buchori Type of Science and Islamic Integration Model.

#### **a. Outlines the essential concepts, principles, and theories based on the selected KD**

As many as 13 teaching material incomplete outlines the chemistry subject matter based on KD. Material such as chemical equilibrium, only outlines examples of equilibrium chemical reaction without further explaining the relationship between  $K_c$  and  $K_p$  as well as how to specify one. In addition, five teaching material less suitable outlines chemistry subject matter based on KD. Such as chemistry matter integrated Islam in the concept of hydrocarbons. In matter of hydrocarbon pre-service teacher make chemistry matter integrated Islam about atomic bomb, while hydrocarbon matter should be integrated are structure and hydrocarbon compounds.

#### **b. Using chemistry concept that integrated Islam**

Majority of the pre-service teachers already quite capable to using chemistry concept integrated Islam (64%).

#### **c. The relevance between subject matter of integration of Islam and chemistry with indicators set out**

As many as nine teaching materials are less relevant. It indicates that most of the pre-service were able to determine the principal of integration of Islam and chemistry matter relevant to indicators defined.

#### **d. Formulating values that related with chemistry matter integrated Islam was studied**

Most of pre-service teachers formulated religious value, directs students to realize the power of God as well as foster as sense of being grateful for all his creation which is never wasted. On of pre-service teacher formulated values about the importance of leaving a balance and not excessive as daily education value.

#### **e. Formulating positive behaviours and noble characters as *amtsal* or parable of chemistry matter**

As many as four teaching materials which formulate positive behaviours and noble characters as *amtsal* of chemistry matter. One of them is integrated in corrosion concept. Pre-service teacher portrays corrosion as a sin that must be prevented or coated with faith in order not to increase and also portrays the damage and devastation in nature like the sloppy characters that must prevent by have careful characters.

**f. Choose and write quliyah verses (Al-Qur'an and/or hadist) that mutually related or strengthen chemistry matter**

One of pre-service teacher associated QS. Al-A'la verse 1-5 with the theory of petroleum formation is discovered by the experts. God has created the green grass (organic substances) which then made it dried grasses blackish (petroleum). In line with the theory put forward experts that petroleum is derived from the weathering results of living organisms that are buried for millions of years, form the oil flowing through cracks in rocks.

Another example on radioactive teaching material, pre-service teacher enter QS. Ash-Shu'ara' verse 185-189 is associated with fission reaction in an atomic bomb. The verses of the Qur'an gives an idea of the magnitude of the toxic cloud disaster that befell the Madyan people as atomic bomb blasts experienced by Japan during World War II.

**g. Choose and write kauiyah verses (natural phenomenon) that mutually related or strengthen chemistry matter**

On nomenclature and reaction equation teaching material, pre-service teacher relate the chemical reaction in daily life are photosynthesis reaction and respiratory reaction. Based on the phenomenon, teaching material was developed to foster a sense of gratitude to God favors given result from photosynthesis reaction and respiratory reaction.

### 3.2 Discussion

All the chemistry concept able to integrate with Islam, chemistry concepts that already integrated were History of Chemistry, Atomic Structure, Chemistry Bonding, Stoichiometry, Thermochemistry, Chemical Equilibrium, Acid and Base Solution, Salt Hidrolysis, and Colligative Properties (Muslim, 2017). The majority of teachers support and believe that the chemistry can be integrated with Islamic values (Muslim, et al., 2017).

Buchori (2016) explains the relationship of Islam and chemistry. Chemistry already appeared when the universe is formed which is evidenced by the bigbang theory that produces a Hydrogen and Helium, this evidenced amplified by the word of God in surah Al-Anbiyaa verse 30. Other chemical elements formed though a cosmic rays, small stars and large star, supernova and man made (non natural). Based on historical development, alchemis was first introduced by muslim in the 7<sup>th</sup> century (700-1400 M) as evidenced by the work of famous muslim as: Jabir Ibn Hayyan, Ar-Razi and Izz Al

Din Al Jaidaki (Muslim, 2016) (Muslim & Fajriah, 2017) (Purwaningrum, 2015).

Many verses about science (chemistry) are revealed in mutasyabihat verses, namely verses that have many possibilities of meaning and understanding so that they need to be contemplated. Humans need effort to understand these verses because they contain future scientific information. Every great discovery of the contemporary century has been explained by the Al-Qur'an since the seventh century ago (Purwaningrum, 2015). So in developing teaching materials that integrate Islam and chemistry, it is necessary to add interpretations that strengthen chemical material.

Islam and Science course as a form of existence of Chemistry Education UIN Syarif Hidayatullah Jakarta in carrying out academic activities to improve the quality of pre-service chemistry teachers. Chemistry teachers from Islamic State University have to posesess knowledge and skills integrating Islamic values. This course training the pre-service chemistry teachers to teach chemistry that integrate Islam (Muslim, et al., 2017) (Fauzan, 2017) (Lubis, 2015).

In this course, pre-service teachers are required to be able to integrate Islam on lesson plan and teaching material. This is in accordance with Lubis' opinion (2015) which states that teachers need to be prepared and understand Integrated Education. In Integrated Education, the teacher acts as a catalyst that should understand and be able to apply Integrated Education system. Teachers must not only understand the theory but also trained to become a teacher are more innovative in preparing learning materials. Into teaching in the classroom. To ensure that the Integrated Education is carried out, the teacher's role is to translate the curriculum into teaching in the classroom (Lubis, 2015).

Teachers must understand and expertise in four teacher's competencies to translate the curriculum into teaching in the classroom. Chemistry integrated Islam learning requires preparing lesson plan seriously and conceptual. The planning of learning is one of the sub-competency of pedagogic competency. According to Listyono, Supardi, Hindarto and Ridlo (2018), a teacher should understand PCK, because the role of teachers in learning begin from the planning stages of learning. In addition teachers need to have personality and understanding of religious and chemistry matter (Listyono, et al., 2018). In the planning stages of learning, teachers need to prepare a lesson plan (RPP) and teaching material of chemistry integrated

Islam (Zain & Vebrianto, 2017) (Rahminawati & Indrasari, 2014).

Easy way to develop an integrated Islamic RPP is to adapt the existing RPP by adding / adapting learning activities that are facilitating Islamic integration, the intended adaptation includes: 1) addition and / or modification of learning activities so that there are learning activities that develop Islamic Integration; 2) the addition and / or modification of achievement indicators so that there are indicators related to the achievement of students in terms of Islamic integration; 3) addition and / or modification of assessment techniques so that there are assessment techniques that can develop and / or measure capabilities related to Islamic integration (Gunawan, 2012, pp. 225-226). In developing an integrated Islamic RPP there is no standard model, thus the teacher has many opportunities to modify new models in preparing and developing RPP. Because of its flexible and non-standard nature there is no uniformity between teachers in preparing and developing RPP or teaching preparation (Gunawan, 2012, p. 308). There are several models that can be used as reference in developing a chemical RPP that integrates Islam and chemistry, one of which is unit of learning model (Satpel model) (Gunawan, 2012, p. 318) (Gunawan, 2012, p. 318) and correlated model (Rahminawati & Indrasari, 2014).

The application of daily planning consists of introduction, core, and closing. The preliminary activity is filled with motivation, opinions, and exploration of the initial knowledge of students. Core activities related to problem formulation, observation and data collection and problem solving. The core activity is essentially the main activity to instill, develop knowledge, attitudes and skills related to the teaching material to be delivered. In the closing activities related to making conclusions, reflection on the activities that have been carried out, providing feedback on the process of learning and evaluation results (Listyono, et al., 2018) (Rahminawati & Indrasari, 2014).

In the case of chemistry learning that integrates Islam and chemistry, the speech method is most often used in learning activities. Aziz (2011) argues that the speech method in learning integration does not completely kill students' creativity, even though it is considered classical and conventional. Students are invited to imagine and bring students to a different time and atmosphere, this method wants us to always reflect and introspect on what has been done and always try to develop scientific creativity and morality in accordance with the Qur'an and the existing chemical concepts. Using lecture methods

requires teacher skills. At the end of learning it is recommended to open a question and answer forum to determine the level of students' understanding of the material presented by the teacher (Syah, 2014, pp. 201-202).

Practical or experimental methods can still be done in chemistry learning that integrates Islam and chemistry. Buchori, Zulfiani, and Irwandi (2014), provide examples of Islamic chemistry learning through everyday material-based experimental methods. Many teachers do not carry out experiments on the grounds of the unavailability of equipment and materials in the laboratory. Whereas Islam teaches not to complicate things like in QS. Al-Baqarah: 185, An-Nisa ': 28, and Al Ha-Hajj: 78. Islam also provides a solution through the letter Hud: 61 by utilizing the natural surroundings (everyday equipment) for chemical experiments.

Regarding learning evaluation, learning assessment in the 2013 curriculum uses an authentic assessment approach. The techniques and instruments chosen and implemented not only measure students' academic or cognitive achievements, but also measure personality development (Gunawan, 2012, p. 235).

Teaching materials are also part of the curriculum. Feasibility of teaching materials must receive serious attention, because teaching material is one of the main components in the learning process. In compiling and determining teaching materials, it should depart from the goal of forming faith, piety, noble character, as well as cognitive and psychomotor mastery of the fields taught. The spiritual and social dimensions of the material must be disclosed and conveyed to all students so that they do not only master cognitive and psychomotor aspects. However, they also understand the relevance of each field of study that is studied with the spiritual and social dimensions (Yusuf, 2015, p. 104) (Syamsuri, et al., 2017). All teachers and pre-service teachers are required to be able to find, explore and develop aspects of faith in every chemical material that will be taught.

Therefore, developing teaching materials is very necessary to pay attention to the demands of the applicable curriculum. Based on the TMD 4S model, the process is a selection process. This process is needed to obtain essential teaching materials in accordance with the needs of students to learn more (Anwar, 2015). Whereas in the Buchori Type of Science and Islamic Integration model, describes the concepts, principles and theories of chemistry at the stage of determining material and concept analysis (Muslim, 2017).

From the result showed that pre-service chemistry teacher is able to integrate Islam in chemistry teaching material and RPP. Chemistry integrated lesson plan drawn up by pre-service teachers include learning objectives, teaching method and learning experiences also evaluation of the learning outcomes. The integration of Islam in chemistry teaching material in the form of merging the concept of chemistry with qauliyah verses, kauniyah verses, Islamic values or characters.

## 4 CONCLUSIONS

This research aims to know the ability of pre-service chemistry teacher to integrate Islam and chemistry in chemistry lesson plan and teaching materials. Based on the results of data analysis and discussion on this research it can be concluded that:

1. Pre-service chemistry teacher's ability to integrate islam and chemistry in lesson plan (RPP) are in good category, amount to 75%.
2. Pre-service chemistry teacher's ability to integrate islam and chemistry in teaching material are in fair category, amount to 65%.

From this study it is recommended that the government should provide standard guidelines to teach the value of Islam through subjects so that teachers understand how to integrate Islam in chemistry subject. Universities or teaching institution, especially Islamic universities or teaching institution, as producer teachers should develop courses and training so as to print graduates who are able to teach chemistry that integrate Islam. Chemistry teachers and pre-service teachers, especially Muslims, should be active increasing their knowledge of Islamic and chemistry issues and also Islamic integrated chemistry learning to strengthen the argument when linking chemistry and Islam so teacher's explanation more easily accepted by students.

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