



## The Effect of Integration Chemistry Learning Strategies to Growth Islamic Understanding in Quantum Chemistry

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### Abstract

This research has goals to know the effect of Integration-Based Chemistry Learning Strategies in Growth Islamic Understanding in Quantum Chemistry. Sample of this research are 9 Students of Grade 4 of Chemistry Study Program of the Universitas Islam Negeri Syekh Ali Hasan Ahmad Addary Padangsidempuan Academic Year 2022/2023. This research uses Quantitative research with 12 Essay Question Method as data collection. The result is students' Islamic understanding after studying Quantum Chemistry for one semester is decrease with percentage 85% and categorized as very good. meaning that the chemistry learning strategy is based on integration in growth Islamic Understanding in quantum chemistry courses can improve students' understanding of Islam. With a chemistry learning strategy based on religious integration, it can create an understanding that chemistry, which has so far been considered abstract, can explain the greatness of Allah.

**Keywords:** Quantum Chemistry, Islamic Understanding, Chemistry Learning, Integrated Learning Chemistry.

### 1. Introduction

Nowadays, we got many cases that show a decline in morals and society, including in education. The decrease of values and morals has a long process to bring up the character of Indonesian people who tend to have values that glorify and measure the success of a person from the material aspect (Masrukhin, 2013). As we know, the government has run about character education in Indonesian education. If the culture of deviant values is basically also the result of the educational process because culture cannot be separated from education, it can also be said that there is something wrong in the educational process in this country for a long time so that it makes less characterized generation. Building Character is very important to rebuild the nation's civilization. The role of educational institutions is expected to be more proactive, creative and

innovative in designing a learning process that is truly able to contribute to character development. Education Must Be The Power In Building Character (Ni Putu Suwardani, 2020).

Education is still considered an alternative action that is preventive, in order to build a better generation. The purpose of education is often formulated ideally sometimes exceeding the meaning of its universal processes. Like for example, people understand that the purpose of education is to direct humans to be empowered, have knowledge and abilities, intelligent, and have insight and skills in living life. Social character grown in chemistry subjects contains character values, as a result of the scientific learning process. Social characters that can be grown through chemistry subjects include living and practicing honest, discipline, responsibility, caring (mutual cooperation, cooperation, tolerant, peaceful), polite, responsive and proactive and proactive. Students are expected to be able to show these characters as part of the solution to various problems in interacting effectively with the social and natural environment, and can place themselves as a reflection of the nation in world relations (Kristiana Elma., Sidauruk Suandi., 2020).

Atoms are substances that cannot be separated again into simpler substances by chemical way. Material is everything that occupies space and has a mass, chemistry is the study of material and changes, the material is divided into three forms, namely: solid, liquid, and gas Atoms are substances that cannot be separated again into simpler substances by chemical way. Material is everything that occupies space and has a mass, chemistry is the study of material and changes, the material is divided into three forms, namely: solid, liquid, and gas (Chang, 2008). Each element is made of small particles called an atom. The element is influenced by the mass of the atoms. Atoms of the same element have the same mass, but the atoms of different elements have different masses (McMurry, 2013)

Islam is a religion that is the source of inspiration and motivation in terms of the study of various sciences. Some Muslim scientists who have carved out their names in the history of chemistry, such as Jabir Ibnu Hayyan, Abu Usman al-Jahiz, and Abu Bakar al-Razi, this is evidence of how Islam is a universal religion that is very inhabited by the development of science from time to time (Sabarni, 2019). Internalization of Islamic values in the material taught will further develop positive characters in the personality of the students. This is inseparable from the values taught in Islam itself which is not only universal but also comprehensive. Not only pay attention to how to build interaction with the Creator (Khaliq) but also so intensely regulate the procedures for building social interaction or relationships between people and even relations between humans and their environment (Yulian, 2020).

Atoms are the smallest particles of objects. Atom is a structure that build the basic nucleus of chemical elements. Allah attracts our attention to the existence of atoms, emphasizing the importance of knowledge. Al-Quran also emphasizes the importance of subatomic particles. Another sign of the miracle of the Al-Quran is a referral to the weight miscall atom when the word dzarrah (atom) is called. The whole universe is made of material and energy atoms are a single structure that arranges the basic nucleus of any chemical

element. Objects are very small, in every seconds carry makes functions in the creation of the universe. This is shown through more than a million stars, planets and countless satellites and the specified orbit quadrillion, then a sand contains the quadrillion (Taslaman,2010). Quantum chemistry is a chemistry that studies the quantum reactions, the world of atomic microscopy. Quantum learns about subatomic movements that cannot be seen directly but the reaction and results of the reaction are real.

Based on the background above, the authors are interested and will conduct research on the inculcation of Islamic values and integration between chemistry and Islam to students with the title of research "The Effect of Integration Chemistry Learning Strategies to Growth Islamic Understanding in Quantum Chemistry".

## 2. METHOD

Researcher have research in

### *Time and Location*

This study was conducted in the early months of June 2023 during learning process Quantum Chemistry Course in Tadris Kimia Students in Academic Year 2022/2023 Universitas Islam Negeri Syekh Ali Hasan Ahmad Addary Padangsidempuan.

### *Research Sample*

Sample of this research are 9 Grade 4 Students of Chemistry Study Program of the Universitas Islam Negeri Syekh Ali Hasan Ahmad Adder Padangsidempuan Academic Year 2022/2023. The experimental class used is those who are learning process of basic Quantum chemistry courses.

### *Research Procedure*

In this research is a quantitative research with the Essay Question Method as data collection. Students of Chemistry Study Program who are studying the basic course of quantum chemistry are given 12 questions about the of quantum chemistry with Islamic values and how the understanding of Islamic Islam after studying quantum chemistry for one semester. Each student will be given the same question with the same material, after obtaining results, points each student will be calculated with the following formula:

$$\frac{\text{score of students}}{\text{score total}} \times 100\%$$

Each question has a maximum point is one point. This means that the maximum score for each student is 9. And the maximum total score for a student is 108. And the final data obtained will be categorized to get presentations and categories for increasing student understanding. And get conclusion as below:

**Tabel.1** Research Instrument

Indicator	Question	No of question
<b>Correlation of Chemistry and Islamic faith</b>	How the correlation of Quantum Chemistry and Islamic Value	2
	Do you believe That Islam is the best way after studying about Quantum Chemistry?	7
	How your opinion that Islam also discuss about details little thing chemistry	8
<b>Correlation of Quantum Chemistry with Allah as our God</b>	How the correlation of Quantum Chemistry with Allah?	1
	After we studied about Quantum Chemistry, are more understand about the greatness of Allah	4
	After we studied about quantum chemistry, do you want to know Allah well?	10
<b>Increase of Islamic Understanding after studied quantum chemistry.</b>	After we studied quantum chemistry make your faith is decreased?	5
	Do you believe about mystical things?	11
	How do you think the correlation of science and Islam?	12
<b>Knowledge after studied quantum chemistry.</b>	Do you believe about quantum chemistry which unseen things?	3
	Can you get conclusion after know quantum chemistry	6
	How do you think about quantum chemistry and future prediction?	9

### 3. DISCUSSION

After conducting research using the interview method, the following research results were Obtained. From 9 students, the results are as shown in the table below:

**Table 2.** Analysis of Data

No	Students	Question number											
		1	2	3	4	5	6	7	8	9	10	11	12
1	Annisa Indah Herawaty	0.5	1	1	1	0.5	1	0.5	1	1	0.5	1	1
2	Rico Apriyanto	1	1	1	1	1	0.5	1	1	0.5	1	1	1
3	Laily wardani	1	0.4	1	0.4	1	1	1	1	1	1	0.2	0.6
4	Annisa Siregar	1	1	0.5	1	1	1	1	1	1	1	0.5	1
5	Yuspida wanti	0.4	1	1	1	1	0.6	1	0.5	1	1	0.5	1
6	Diva Ardian	1	0,5	1	1	1	1	0.4	1	1	0.4	1	1
7	Santi Hasanah	1	0.4	1	1	1	1	1	0.7	0.8	1	0.2	0.5
8	Mawaddah	1	1	0.5	0.7	1	1	1	1	1	1	1	1
9	Dinda Melani	0.3	1	1	1	1	0.4	0.7	1	1	1	0.6	1
<b>Total</b>		7.2	6.8	8	8.1	8.5	7.5	7.6	8.2	8.3	7.9	6	8.1
<b>Average</b>		0.8	0.7	0.8	0.9	0.9	0.8	0.8	0.9	0.9	0.8	0.6	0.9

In the table above, the maximum score is obtained for the question "Has learning Quantum Chemistry increased your faith?" meaning that after students learn about quantum chemistry, they love Islam more and more as their religion. Because by learning quantum chemistry, it means learning also about the Greatness of Allah SWT. Then the minimum score is on the question "Do you believe in things beyond Reason/Unseen?" Students' answers indicate that they understand more and more that something in this world has something to do with science and can be explained scientifically slowly. The average point that students get from each question is 0.8, meaning that students' understanding of relating Quantum Chemistry to Islamic Values is categorized as good.

We get the conclusion:

$$\frac{92}{108} \times 100\% = 85\%$$

With categorized

**Table 3.** Categories of Score

Total Score	Categorized
80-100	Very good
70-79	Good
60-69	Enough
50-60	Not nough
< 50	less

From the data, we can conclude: Based on the formulation that we have obtained and categorizing students' understanding related to Quantum Chemistry and Islamic Understanding,

The result is that students' Islamic understanding after studying Quantum Chemistry for one semester is 85%, meaning that the chemistry learning strategy is based on integration in growth Islamic Understanding in quantum chemistry courses can improve students' understanding of Islam. With a chemistry learning strategy based on religious.

Integration, it can create an understanding that chemistry, which has so far been considered abstract, can explain the greatness of Allah. Chemistry is the study of things that exist on earth, both those that can be seen macroscopically or microscopically. Something as macroscopic as Quantum Chemistry can be linked to religion because it sheds light on something we believe in but cannot see directly.

With an increase in their Islamic understanding of chemistry, it is hoped that the Islamic Values of the Students will increase and be able to build good character within themselves. And one day they can apply it to their students as future chemistry teacher candidates.

#### 4. Conclusion

Based on the results above, it can be concluded that integration-Based Chemistry Learning Strategies in Growth Islamic Understanding in Quantum Chemistry Courses can increase Islamic Values in Students by 85% and are categorized as very good and quantum Chemistry can be a course that is integrated with Religious Studies.

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