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Strengthening Humanity:
New Approaches on Community Services

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The 2nd Annual Conference on
Islamic Community Service
(ACICS) 2021

Wednesday, October 27, 2021

**Strengthening Humanity:
New Approaches on Community Services**

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**The 2st Annual Conference on
Islamic Community Service (ACICS) 2021**

Semarang, October 27th 2021

Supported by:



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Organized by:

UNIVERSITAS ISLAM NEGERI WALISONGO

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**Strengthening Humanity:
New Approaches on Community Services**

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THE 2ND ANNUAL CONFERENCE ON ISLAMIC COMMUNITY SERVICE (ACICS) 2021
“STRENGTHENING HUMANITY: NEW APPROACHES ON COMMUNITY SERVICES”
THE INSTITUTE OF RESEARCH AND COMMUNITY SERVICE
UNIVERSITAS ISLAM NEGERI WALISONGO SEMARANG

Assalamu’alaikum Warahmatullahi Wabarakatuh

Honorable Rector of Universitas Islam Negeri Walisongo Semarang,

Honorable Vice Rectors of Universitas Islam Negeri Walisongo Semarang,

Honorable Heads of Institution, Bureau, and Internal Audit Unit of Universitas Islam Negeri Walisongo Semarang,

Respectable invited speakers,

Distinguished participants and guests, ladies, and gentlemen,

All praises and thanks belong to Alloh SWT, The Almighty, The Most Merciful and The Most Beneficent, The One granting us with health, blessing and opportunity to attend The Second Annual Conference on Islamic Community Service (ACICS) 2021 entitled with the theme “Strengthening Humanity: New Approaches on Community Services” organized by The Institute of Research and Community Service/ LP2M Universitas Islam Negeri Walisongo Semarang.

Secondly, may the peace and blessings of Alloh be on the last prophet and messenger, our master, Muhammad PBUH and his companions as well as all those who follow his path until the end of time.

Dear guests, ladies, and gentlemen,

On behalf of Universitas Islam Negeri Walisongo Semarang, I would like to welcome you all, directly and virtually, especially for the invited speakers, **Prof. Dr. Abd Halim Bin Mohd Noor**, The Rector of UiTM Cawangan Melaka, **Prof. Dr. Mohamad Fauzan Noordin**, The Director of IIIT East and Southeast Asia (ESEA), **Dr. Wirach Taweepreda** from Prince of Songkla University, Thailand, and **Dr. Neil Rose**, The Curriculum Development Advisor at VSO Ministry of Education, Nepal. We welcome you with the warmest greetings to our University, Universitas Islam Negeri Walisongo Semarang.

Thank you for your participation, support and enthusiasm attending this conference. I hope with this conference, we will continue our commitment and dedication to community and humanity.

Respectable ladies and gentlemen,

As the world becomes more challenging, human and humanity are being tested through various problems. We do not only face classical problems in humanity including poverty, inequality, human rights, environment problems, etc., but currently we are facing the pandemic that potentially exacerbates our problems. Contribution to humanity and our society in particular then becomes more critical. Therefore, new approaches and practices of community service in efforts to solve such problems has been always crucial as humanity’s problems persist and become more challenging.

Universitas Islam Negeri Walisongo Semarang has been contributing to humanity and society by enacting community service as our core program and responsibility. Students had, still have, and will

be continuously deployed to communities to give their service to society. We fund various programs and research on community service organized by our lecturers and staffs. They even continuously give their time voluntarily to enact community service on their own.

However, more discussion and research should be more facilitated in order to learn and further explore more effective and impactful approach in community service. This is mainly because the societal dynamic and the problems of humanity persist and continuously grow as the world is changing, becoming more complex and unpredictable.

The 2nd Annual Conference on Islamic Community Service (ACICS 2021) aims to provide a platform for academics, researchers, experts, and practitioners to discover, develop and abstract the understanding of community service in terms of its role in strengthening humanity. It particularly seeks to explore new approaches and practices of community services and how those can contribute in the efforts of strengthening humanity; New approaches and practices of community engagement and empowerment; Approaches and practices of Religious Moderation towards more peaceful humanity; The roles of Islamic universities in strengthening humanity and community reinforcement; Utilizations of science and technology in community empowerment and aiding humanity; Development of effective community education in strengthening humanity; Contribution of Islamic university students in community engagement; and to map the efforts in building environment-friendly society through community service.

Respectable ladies and gentlemen,

I really hope that this international event can contribute to a greater purpose, strengthening human and the humanity as the act of worship and showing our gratitude to our creator, Alloh SWT.

That is all from me, ladies and gentlemen,

On behalf of Universitas Islam Negeri Walisongo Semarang, I declare the opening of this event, The Second Annual Conference on Islamic Community Service. May you enjoy the event and have a fruitful discussion.

Wassalamu'alaikum Warahmatullahi Wabarakatuh.

Semarang, October 27th 2021

**Head of Institute for Research and Community Service
Universitas Islam Negeri Walisongo**

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CHEMISTRY TEACHERS TRAINING ON SOLUTION CHEMISTRY CONCEPTS BASED ON SUSTAINABILITY AND UNITY OF SCIENCES

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ABSTRACT

The online learning policy in the era of the Covid-19 pandemic has made the chemistry practicum learning process not optimal. The survey results showed that 27% of MA chemistry teachers in Semarang City experienced problems with practicum tools and 37% of teachers stated that they had problems with practicum materials in the implementation of online practicums. Therefore, chemistry teachers at MA Semarang City need to be provided with practicum learning training based on sustainability and integrated with Islamic values. This training showed that participants were able to identify practicum activities on MA chemistry materials, the concept of sustainability, and Islamic values developed from practicum activities. This is indicated by the level of understanding related to the development of sustainable practicum activities online is very high (37%), high (65%), and moderate (18%). The level of understanding related to the implementation of sustainable practicum activities online is very high (12%), high (70%), and moderate (18%). The level of understanding related to Islamic values is very high (12%), high (70%), and moderate (18%).

Keywords: training; online practicum; sustainability; unity of sciences

INTRODUCTION

The current pandemic era has led to policies related to distance learning in every school. Distance learning is a challenge for chemistry teachers. Identical chemistry learning is carried out in the laboratory so that it is difficult for chemistry teachers to carry out learning optimally. The results survey of MA chemistry teachers showed that online chemistry learning is not yet student-centered. As many as 88% of MA chemistry teachers stated that chemistry learning was not yet student-centered. Therefore, online learning requires a learning innovation that can activate students, where students become the subject of learning.

Jauhar (2011) states that active learning means learning that requires the activeness of all students and teachers physically, mentally, emotionally, even morally and spiritually. Teachers must be able to create an atmosphere so that students actively ask questions, build ideas, and carry out activities that can provide a direct experience so that learning is an active process of students in creating their knowledge. Students are indirectly trained to be responsible for their learning process. The teacher's role in active learning is a facilitator to help students learn and have the skills needed

to achieve learning objectives. Teacher as facilitator provides pedagogical, psychological, and academic facilities for the cognitive development of students.

One alternative learning design that can be applied by teachers in Madrasah Aliyah (MA) is the MIKiR (Experiencing, Interaction, Communication, Reflection) approach (Siregar & Sari, 2020). MIKiR approach has been applied in various fields and levels of education (Siregar & Sari, 2020; Muhammad & Rusilowati, 2014; Mulyanti et al., 2021; Redhana & Sya'ban, 2014) and has applied to both face-to-face and online learning. The MIKiR approach requires students to be more actively involved in conducting experiments, observing, and processing information. Students are also required to work together and collaborate in groups to solve problems and present the result of collaboration to teachers and other students.

The meaning of learning will be seen in the acceptance of new concepts by students after learning completed, this is must also occur in learning solution chemistry at school. On the other hand, concepts in solution chemistry cover a wide range of complex knowledge. Abstract concepts of acids-bases include proton transfer between acids and bases based on acids-bases Bronsted-Lowry concept, the ionization of H^+ ions or OH^- ions in water based on the Arrhenius concept of acids and bases, and the transfer of lone pairs of electrons based on the Lewis concept (Wicaksono, 2016). Abstract concepts considered difficult and complex require learning designs that can facilitate students in mastering concepts as a whole (Dekorver et al., 2020).

Chemistry learning is identical to the use of hazardous chemicals (Mulyanti & Kadarohman, 2021) and its use is limited to activities in the laboratory (Akani, 2015; Elzagheid, 2018). The implementation of the sustainability program is a challenge for chemistry teachers in carrying out learning activities to participate in education sustainable development (ESD) programs (Jegstad et al., 2018). Implementation of sustainability in learning activities, especially in hands-on laboratory activities, is a problem for teachers. Teachers must continue to prioritize efforts in achieving learning objectives according to the curriculum. Therefore, a learning model for hands-on laboratory activities was needed that is sustainability-based as effort to achieve targets SDGs.

Another demand for learning activities at Madrasah Aliyah under the Ministry of Religion is the integration of religious values in studying general sciences. This is demand for universities to produce graduate chemistry teacher candidates to play an active role in providing training and mentoring for teachers at Madrasah Aliyah as an effort to link religious understanding to science learning. This is called the unity of sciences because all knowledge contained in the Qur'an and true sains comes from Allah SWT.

RESULT AND DISCUSSION

The training activities include providing material related to active learning design online through the MIKiR approach and materials related to practicum design based on sustainability and unity of sciences. This aims to maximize the delivery of training materials so that participants can effectively participate in the training and practice directly during training activities.

The training material on the first day was the MIKiR approach (Experiencing, Interaction, Communication, and Reflection) which was implemented by participants both online and offline. Participants apply the steps of the MIKiR approach so that it is hoped that the material that has received can implemented during chemistry learning activities at school, especially in chemistry

practicum activities. The resource persons for this training were Sabar Nurohman, M.Pd. who delivered the material, namely active learning with the MIKiR approach. The event was opened by Dr. H. Ismail, M.Ag (Dean Faculty of Science and Technology). The training includes the activity of filling out various worksheets in groups with discussions conducted in a virtual room (breakout room zoom) regarding important components in learning activities that make students the center of learning. Participants are allowed to discuss determining the elements of active learning and identify active learning based on video shows and learning resources provided by the presenters.

Table 1.
Identification of Active Learning Elements (Group 1)

Experiencing	Interaction	Communication	Reflection
Students practice the process when an earthquake occurs.	Teacher asked about the impact of the earthquake that occurred in Kalibening.	Presentation of simulation results about earthquakes.	Suggestions from students to government how to handle similar incidents.
Students search for information related to earthquakes through the internet.	Students discuss the process of an earthquake.	Presentation results of practical activities blowing breath into the solution.	Students discover the impact caused by the earthquake in Kalibening. Summarize the results of the human respiratory process.
Students practice blowing a breath into a chalk solution.	Group discussion after doing the activity of blowing the solution.		

The activity of identifying the elements of active learning produces data as shown in Tables 1 and 2. Based on Tables 1 and 2, the training participants consisting of two groups were able to identify the elements of active learning based on the videos shown by the resource persons. Participants mentioned the active activities carried out by students which included aspects of experiencing, interaction, communication, and reflection. Experiencing activities are students practicing and observing earthquakes, students looking for information about earthquakes through the internet, and students doing lime water blowing practice. Interaction activities are interactions in groups in the form of discussions and responding to other people's opinions. Communication activities, students convey the results of discussions in groups to teachers and other groups. Reflection activities, where students can take lessons from practical activities carried out and find the impact caused by the earthquake.

Table 2.
Identification of Active Learning Elements (Group 2)

Experiencing	Interaction	Communication	Reflection
Students blow chalk water	Students observe and discuss in groups	Students communicate the results of the practice both to the teacher and friends using presentations.	Presentation of the results of the practice and conclude the results of the practicum above the surface and in the lime water
Students simulate the occurrence of an earthquake	Students look for references on the internet		
Students work together to practice the process of earthquakes	Students interact with the teacher conveying problems about the occurrence of an earthquake		
Students directly present the results of the practicum report collaboratively			
Students demonstrate the practicum			

Participants identify active learning activities in the form of activities carried out by students and teachers. Activities carried out by students are observing examples of acid-base solutions at home (experiencing elements), discussing the results of observations about acid-base in the group (interaction aspect), students presenting their observation to other groups (communication aspect) and concluding products. Products that include acids or bases (reflection aspect). Activities carried out by teacher so that students become active in learning are asking questions about products or drinks that include acids or bases, asking questions about examples of natural acid-base indicators, asking questions about how to distinguish acid-base solutions, and encouraging students to be able to conclude the results of the discussion. Activities carried out by teachers in responding to activities carried out by students include ensuring students can classify examples of acids and bases, clarifying identification results about acid-base properties, clarifying how to distinguish acid-base solutions, and appreciating practicum reports.

The training carried out on the first day went well, but based on the reflection questionnaire filled out by the participants there were several difficulties, namely how to plot a reflection approach, how to apply MIKiR learning techniques in online classes, implementation of the MIKiR approach when learning online, how to increase creativity and critical thinking in online classes. students during the current pandemic due to face-to-face limitations, how to fill out worksheets via google docs, and the differences between the MIKiR approach and other learning approaches.

The second day's training material was the development of the MIKiR approach to chemistry practicum learning based on sustainability and unity of sciences. The purpose of the training is participants can identify practical activities and Islam values in each basic competency, design and practice online practicum activities with simple tools and environmentally friendly chemicals, and discover Islam values developed from practical activities.

The stages of training are as follows:

- a. Introduction (5 minutes): the facilitator conveys the background, objectives, and outline of the activity.
- b. Connection (15 minutes): share knowledge about practical learning at Madrasah Aliyah.
- c. Application (145 minutes): includes:
 - Activity 1 is to identify practical activities that can implement the concept of sustainability and Islamic values in each basic competency.
 - Activity 2 is designing practical activities with simple tools and environmentally friendly chemicals.
 - Activity 3 is experiencing (participants carry out a solution chemistry practicum, including identification of electrolyte and non-electrolyte solutions, and reaction rates); Interaction (discussion of practicum findings and discovering aspects of sustainability and unity of sciences); Communication (the process of conveying ideas on aspects of sustainability and unity of sciences from the practicum carried out). Participants write down the results of the experimental activities carried out on a worksheet. Based on the recapitulation of the worksheets, it is found that the sustainability aspects contained in the experiment are:
 1. The use of tools and materials around the house, environmentally friendly, and easy to obtain.
 2. The reaction between vinegar and baking soda produces a gas that causes the balloon to inflate.

Aspects of Islamic values obtained are:

1. Realizing the greatness of God in creating chemistry.
 2. Introduce God as the giver of light.
 3. Introducing Allah as Al Khaliq (formation of a new substance from the reaction).
 4. Introducing Allah as Al Qahhar, namely subjugating everything according to the provisions of His laws.
- d. Reflection (10 minutes), participants answer the questions:
- How to develop practicum activities that are sustainable and based on the unity of sciences?
 - Why are practicum activities that are sustainable and based on the unity of sciences important to implement?
- e. Extension (5 minutes), in the form of follow-up suggestions, namely conducting practicum activities that are sustainable and based on the unity of sciences.

Participants fill out worksheets to identify chemistry practicum activities that applied with the concept of sustainability and Islamic values in each basic competency. Based on the results of the worksheet recapitulation, it is found that the concept of sustainability and Islamic values applied to almost all basic competencies. Filling out the worksheets is continued by identifying aspects that applied the concept of sustainability and Islamic values in each of the basic competencies of practicum activities, including:

- a. Basic competence 4.1 class X (presenting observations about the nature of chemistry, scientific methods, and work safety in studying chemistry and the role of chemistry in life): using tools that are around and easily available, environmentally friendly, and the results are useful for continuation in the field of science others such as the chemical process of making tempe and its benefits (sustainability concept); students realize the greatness of God in creating useful chemistry, for example, the existence of drugs and food preservatives (Islamic values).
- b. Basic competence 4.5 class X (processing and analyzing comparisons of the process of forming ionic bonds, covalent bonds, coordinating covalent bonds, and metallic bonds as well as interactions between particles (atoms, ions, molecules) of matter and their relationship to the physical properties of matter): describes the formation of covalent bonds with using mica and paper (sustainability concept); the concept of alms in ionic bonds that accept and give electrons (Islamic values).
- c. Basic competencies 4.5 class XI (designing, conducting, concluding, and presenting experimental results of exothermic and endothermic reactions): exothermic and endothermic reaction practicum using materials that are around and environmentally friendly (sustainability concept); the existence of exothermic and endothermic reactions in everyday life that are beneficial to humans (Islamic values).
- d. Basic competence 4.3 class XII (creating electrochemical cell ideas/ideas/products): using batteries, battery cells as examples of easy-to-find voltaic cells (sustainability concept); using battery cells makes it easier for us to run machines such as vehicles so we are grateful for a smooth means of transportation.

Based on the contents of the worksheet, it was found that most of the participants expressed their opinion from the aspect of the unity of sciences on each basic competency, namely the

expression of gratitude for God's creation, especially for His creation which discussed in practical activities. In the sustainability aspect, participants apply the principles of sustainability in the form of using environmentally friendly materials in the chemistry practicum.

Participants fill out a reflection questionnaire at the end of the activity. Based on the results of the questionnaire, data showed that the level of understanding of participants regarding the development of sustainable practicum activities online was medium (18%), high (65%), and very high (17%), as shown in Figure 1. In general, participants understood how to develop aspects of sustainability aspects in chemistry practicum learning activities.

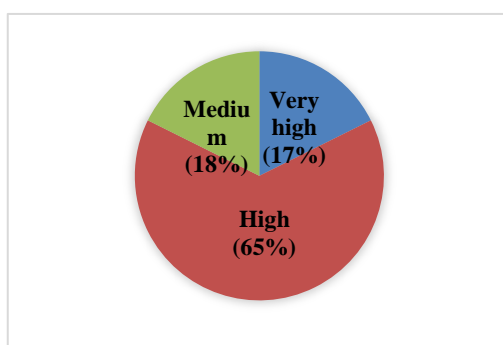


Figure 1.
Level of understanding related to the development of sustainable practicum activities online.

Figure 2 shows the level of understanding related to the implementation of sustainable practicum activities online, namely moderate (18%), high (70%), and very high (12%). Participants understand how to implement sustainability aspects in chemistry practicum learning activities. Participants' understanding of the sustainability aspect is needed to design practical active learning activities.

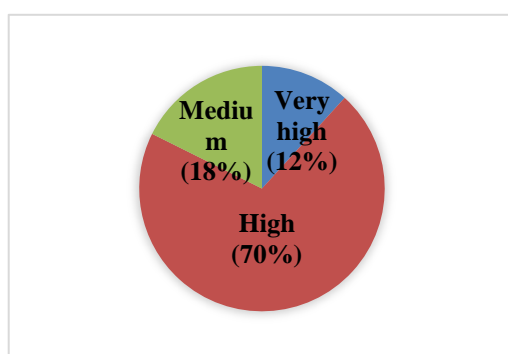


Figure 2.
The level of understanding related to the implementation of sustainable practicum activities online.

Figure 3 shows the level of understanding related to Islamic values developed in chemistry learning with practicum methods, namely medium (18%), high (70%), and very high (12%). Participants understand how to develop aspects of religiosity in chemistry practicum learning

activities. Practical learning becomes meaningful if students are given knowledge about the relationship of chemistry material that is practiced with Islamic values. Students not only acquire cognitive aspects, but also knowledge that can increase faith in the existence of a God. This is also reflected in the attitudes and behavior of students both towards objects around them, towards the surrounding environment, as well as towards other God's creatures.

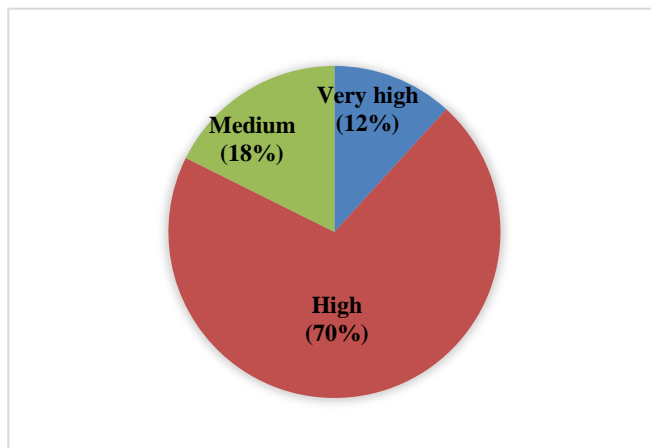


Figure 3.
The level of understanding related to Islamic values developed in chemistry learning with practicum methods.

Participants practice the reaction rate practicum and test the electrolyte-non-electrolyte solution on the second day. A practicum kit containing practicum tools and materials, practicum instructions, and writing utensils has been distributed before the training so that all participants can do the practicum according to the plan. Participants were enthusiastic about doing practicum activities independently in their respective places and discussing in online groups as shown in Figure 4 and Figure 5. Participants did the reaction rate practicum and electrolyte test well. This shows that the practicum instructions meet the criteria for use because previously the practicum instructions have been tested. The experimental steps can be understood and practiced and do not make participants confused about what to do.



Figure 4.
Participants do a simple practical electrolyte test



Figure 5.
Practical results of reaction rates.

The training was carried out well, but there were things that were not understood by the participants, namely:

1. Implementing every chemical material with sustainable practicum
2. Grouping certain KD, especially class XI, which is sustainable with student characteristics
3. Filling out the worksheet
4. The problem of cross-interest chemistry lessons is only 30 minutes/1 lesson hour, so many chemistry materials are not delivered
5. References to verses of the Qur'an that can link practicum with Islamic values.
6. Designing online practicum learning using materials available in the environment.

CONCLUSION AND SUGGESTION

The training of chemistry teachers on solution concept chemistry based on sustainability and unity of sciences was carried out well. Participants participated in the training enthusiastically from start to finish. The level of understanding related to the development of sustainable practicum activities online is very high 17%, high 65%, and moderate 18%. The level of understanding related to the implementation of sustainable practicum activities online is very high 12%, high 70%, and moderate 18%. The level of understanding related to Islamic values developed in chemistry learning with the practicum method is very high 12%, high 70%, and moderate 18%. Suggestions that can be given regarding this activity are the need for training with different themes for chemistry teachers at Madrasah Aliyah who are members of the Chemistry MGMP of the Ministry of Religion of Semarang City to support development teacher competency and implementation of active learning.

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