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Student communication skills from internalizing religious values to energy modules in life systems

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Abstract: This study aims to analyze the effect of energy modules in life systems on religious values and communication skills. This type of research is a quasi-experimental study with a population of 40 students in grade 7 in SMPN 1 Rumpin, Bogor district. The research design used was a one-group pre-test and post-test. The data obtained were then analyzed using quantitative descriptive. The finding shows that the application of energy modules in living systems effectively internalizes the religious values of students based on the average n-gain of 0.49 which is included in the medium category. Students' communication skills reach a good category with a score of 78%. The study concludes that the energy module in living systems effectively internalizes religious values and students' communication skills.

Keywords: internalization, modules, religious values, communication skills

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INTRODUCTION

The results of interviews with eight junior high school science teachers in Bogor district during the preliminary study explained that the learning resources used did not integrate religious values. The books and modules used contain too much material to be achieved due to curriculum demands, and lack the character load, in accordance with findings from Diani and Hartati (2018). Research results from Maturradiyah and Rusilawati (2015); Sari et al. (2015), state that teaching materials used in learning mostly emphasize aspects of knowledge that require students to memorize more material. So that it takes a module that integrates religious values to guide students in internalizing religious values and forming good spiritual attitudes following religious guidance. Religious values (spiritual attitudes) become the basis for shaping a person's character is thinking and acting according to religious rules (Widyaningsih et al., 2014). In line with the findings from Suciati et al. (2020) the use of modules in learning can shape the character of students.

The religious value (spiritual attitude) in the implementation of Curriculum 13 is contained in attitude competency (KI-1) and is one of the dimensions in Strengthening Character Education (PPK) programmed by the government based on Government Regulation No. 19 of 2017. The formation of religious values in PPK is mentioned in the Ethics dimension, namely individuals who have the character under the guidance of religion, faith, and piety. Whereas knowledge competency (KI-3) in PPK is mentioned in the Literacy dimension, that is individuals who are intelligent and have academic abilities. The dimension of the heart (religion) and literacy (thought) is a unity to form individuals who have a noble character, faith, and piety who can integrate their faith and knowledge.

Strengthening the character education of students is motivated by the existence of moral decadence in students, such as brawls, acts of violence, drugs, promiscuity, lack of courtesy in the association. The learning process in schools is expected to be able to shape the character of studentsPfor the better, one way by internalizing religious values in science. The process of internalizing religious values is the responsibility of all schools, not only in Islamic based schools but also in public schools. Strengthening character education is the basis for removing the educational dichotomy between Islamic based schools and public schools. Character education is a shared responsibility, following the implementation of the 2013 curriculum which contains attitude competencies, and is strengthened by strengthening character education.

Science learning among other things has the aim of increasing faith in The Creator and raising awareness to preserve nature (Hadini & Puspitasari, 2012). The purpose of learning science can be achieved by integrating Islamic values and science. To build student understanding of verses of the Koran related to science material. Religious is an attitude and behaviour that is following the guidance of religion, and tolerance with others (Hasan et al., 2010). Religious values such as devotion, honesty, sincerity, and responsibility can be formed in the learning process (Susilowati, 2017). The material in science has a lot to do with the creation of nature and humans so that religious values can be integrated into teaching materials.

To increase student involvement in the learning process independently, one of the ways is by using teaching materials in the form of modules. Analysis of various articles originating from journals on science modules based on the integration of Islam and science has been carried out by (Faizah, 2020; Hamzah, 2016; Latifah & Ratnasari, 2016; Selviani & Anggraini, 2018). They showed that learning with modules can improve student learning outcomes. The research conducted by Nurjanah et al. (2019) and Yunita et al. (2019) found that integrated Islamic modules were effective in enhancing students' religious character. Utami et al. (2018) also found that integrated modules of religious values can improve students' independent character. Okmarisa et al. (2016) research also showed that integrated teaching materials for spiritual values are effective in developing students' spiritual values.

The implementation of Curriculum 13 emphasizes the importance of 21st-century skills known as 4C that require students to master those skills in facing challenges in their future lives. These skills include critical thinking, creative thinking, communication, and collaboration. According to Griffin and Care (2015), 21st-century skills are divided into 4 categories: (1) way of thinking which includes creative, critical, innovative thinking in solving problems and making decisions; (2) way of working which includes communicating, collaborating, working in teams; (3) way of living (skills for living in the world) as a life and career development, a sense of responsibility as a personal and social human being; (4) a tool for developing 21st-century skills (tools for working), including mastery of digital information technology and literacy. According to Barry (2012), communication skill is one of the skills needed by students to enter the workforce in 21st-century.

Interactions that occur in the learning process both involve teachers and students and interaction among students requires good communication skills. Learning objectives will be achieved if the communication goes well in the learning activities. Communication skills are individual skills to convey and receive messages according to context (East, 2015), and the process of sharing knowledge and ideas between two or more people to create an understanding of concepts (Göksoy, 2014). Students can convey thoughts and ideas in an oral, written, or non-verbal manner following the context so that the listener can receive messages appropriately and effectively. Communication is said to be appropriate when students can convey messages according to the situations and conditions encountered. Communication is considered effective if the listener easily understands the contents of the message delivered by the speaker (Göksoy, 2014; Morreale et al., 2017). So, communication skills are students' skills to receive and convey what has been received correctly and effectively by oral and writing.

Communication skills are very important to master especially in the learning process between teachers and students where the process of exchanging information in the form of learning materials between teachers and students (Pal et al., 2016). Communication in teaching and learning activities aims to transfer knowledge, share thoughts or ideas (Chung et al., 2016; Sharifirad et al., 2012). If communication between teacher and student is effective, the learning material will be easily understood by students. Interaction between teachers and students requires communication skills so that learning objectives can be achieved. Communication skills can be applied through learning content, practices, and assigning performance tasks, with a focus on learning skills including taking information, scientific reading and writing, listening and observing, data representation, and knowledge presentation (Spektor-Levy et al., 2009). Factors that influence communication include: (1) psychological factors, including fear, shame, anxiety and lack of confidence when asking questions or opinions (Göksoy, 2014; Pal et al., 2016; Urwani et al., 2018); (2) culture, lack of feedback and language (Göksoy, 2014; Zhang et al., 2019); (3) classroom environment, curriculum and students (Pal et al., 2016); (5) motivation and curriculum can influence the success (Harris & Hua, 2015).

The application of communication skills in learning was not easy. Many obstacles encountered by teachers both the lack of ability of the teacher himself and the lack of confidence in students to communicate. This is what causes the low communication skills in middle-class students included in the

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low category (Trilling & Fadel, 2009). To practice student communication skills, these skills can be integrated with learning rather than individual learning (Saavedra & Opfer, 2012). Communication skills can be developed in an integrated manner through the use of learning models, learning tools, and teaching materials. Not with its learning that specifically teaches communication skills. If students experience obstacles in communication skills, then students will be less than optimal in obtaining new information to overcome a problem, so that it will affect students' scientific literacy.

Analysis of various journals published about communication skills has been carried out by Astuti et al. (2016) showing that the application of project-based learning models can improve communication skills both in writing and orally. Research from Deryati et al. (2013) produces a positive and significant effect between science communication skills using the Multiple Representations learning approach to the scientific literacy of junior high school students. El Shinta et al. (2015) also found that the use of PBL learning models affected improving students' communication skills. Yanti et al. (2015) examined Student Worksheet with character-based discovery-inquiry capable of improving communication skills and concept mastery. Meanwhile, research from Yuritantri (2013) found that the use of the Guided Inquiry method can improve communication skills in the medium category. Oktaviani and Nugroho (2015) found that the application of the Creative Problem-Solving model in learning could improve students' understanding of concepts and communication skills by increasing the application of the Creative Problem-Solving model in learning.

Analysis of several articles in journals reinforces the importance of the study of a module that integrates Islamic values for more effective learning. This reinforces the importance of using energy modules in living systems as a source of learning to internalize students' religious values and communication skills. This study is to find out the module's effect in measuring students' religious values (spiritual attitudes) and students' communication skills.

METHOD

This research uses a quasi-experimental method with one group pre-test and post-test design that refers to Sugiyono (2012). The effect of giving a treatment on subjects based on differences in the results of the pre-test and post-test. Before the treatment, subjects were given a pre-test, and after the treatment, they were given a post-test. The effectiveness of the treatment with the use of the module is measured by comparing the average score of the pre-test with the average value of the post-test. The research subjects consisted of 40 students of class VII in a junior high school in Bogor district. The chart of the design is used as shown in Figure 1.

Pre-test	***Treatment***	***Post-test***
O_1	⟶ X ⟶	O_2

Figure 1. Chart One Group Pretest-Posttest Design (Sugiyono, 2012)

Information:
O1 = pre-test score (before being given treatment)
O2 = post-test score (after being given treatment)
X = treatment

The spiritual attitude in the 2013 Curriculum is the attitude associated with the formation of students who have noble, faithful, and pious character. Spiritual attitude as an embodiment of awareness in practicing religious teachings in students' behaviour. Spiritual attitude competence at the SMP/MTs level refers to KI-1, namely: Appreciating and living the teachings of the religion they hold. Assessment of students' spiritual attitudes using a questionnaire consisting of 20 statements. Indicators of the spiritual attitude of students assessed in this study are praying before and after learning, believing in the greatness of God, glorifying the greatness of God, always being grateful and conveying greetings (Irwansyah, 2020) that have been modified according to the energy material in living systems.

Religious attitude is assessed based on a questionnaire using an attitude scale refers to the Likert Scale with five alternative answers. This attitude scale is arranged in the form of a statement and is followed by a choice of responses that indicate the level. The response choices are SS (strongly agree), S (agree), R (doubt), TS (disagree), STS (strongly disagree). There are 2 kinds of statements in this assessment instrument, namely (1) positive statements with answer scores: SS = 4; S = 3; R = 2; TS = 1; and STS = 0, and (2) negative statements with answer scores, namely: SS = 0; S = 1; R = 2; TS = 3;

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and STS = 4. The attitude scale is given to students for the pre-test and post-test so that the development of students' religious attitudes can be known after using the module.

The module effectiveness analysis to internalize religious values is done by calculating the N-gain score, which is to measure the difference between the pre-test and post-test scores. The results of the N-gain calculation are then interpreted into 3 categories shown in Table 1.

Table 1. Index Criteria of N-Gain (Sugiyono, 2012)

N-Gain	Criteria
$d < 0,3$	Low
$0,3 \leq d \leq 0,7$	Medium
$d \geq 0,7$	High

Analysis of whether or not the effective use of the module internalizes student religious values can be seen from the results of N-gain calculations. While the assessment of communication skills is assessed based on self-assessment with assessment indicators in 4 aspects which include: presentation in front of the class, expressing opinions, asking, or answering questions, active in learning activities, able to make decisions. By scoring: 4 (always done according to the statement), 3 (often doing according to the statement), 2 (sometimes doing according to the statement), and 1 (never did according to the statement). The scoring results (percentages) on each indicator of communication skills are obtained by counting the number of raw scores divided by the maximum number of scores per indicator, the results are then multiplied by 100%.

RESULTS AND DISCUSSION

The effectiveness of the module to internalize religious values in students can be known from the difference between the results of the questionnaire pre-test and post-test. The pre-test is given before learning by using a module, then post-test is given after learning to use the energy module in a living system integrating religious values applied. The N-gain value from the results of the questionnaire data for each indicator of religious values is contained in Table 2.

Table 2. N-Gain Score of Students' Religious Attitude

Component of assessment	Average			Category
	Pre-test	Post-test	N-gain	
Religious attitude	70	85	0,49	Medium

The average score of N-gain increase in religious attitudes is 0.49 with a high category. This N-gain score shows that students' religious attitudes are influenced by the use of integrated science modules in religious values in learning in the medium category. The developed module is equipped with verses of the Koran and hadiths, and the material in the module is arranged based on scientific literacy in each learning activity. The description of the material and its application in the science, technology, and community sections contained in the module invites students to think about its relation to the power of God so that it encourages students to have more faith and practice the teachings of their religion. Following the findings of Susilowati (2017), students' religious attitudes improved in the high category by using science teaching materials integrated with Islamic values. Research reinforcing this finding was carried out by Nurjanah et al. (2019); Saputro (2011); and Yunita et al. (2019), who stated that the integration of Islamic (religious) values in the module are effective in improving students' religious character. Similar to what was stated by Djudin (2011), inserting religious values in science lessons can increase students' faith. Jamaludin et al. (2014) also found the integration of religious values into the curriculum of learning to shape humans who can apply their knowledge following Islamic teachings.

The competence of spiritual attitudes of students assessed in this study is to pray before and after learning, give thanks for the gifts received, be serious in doing something, believe in the existence of God, and awareness of practicing religious teachings. The results of the assessment by questionnaire per aspect of the spiritual attitude of students are outlined in Table 3.

Based on Table 3, the highest N-gain score of 0.55 with the high category is the spiritual attitude of praying before and after doing activities. The percentage of this aspect increases compared to before using the module (pre-test). This shows that the spiritual attitude has become a habit of students in daily life because religion teaches that. The use of modules increases the awareness of students to pray with the existence of religious values that are integrated with energy material that can enhance these spiritual

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aspects. Following the results of research from Susilowati (2017), science teaching materials integrated on Islamic values can improve religious attitudes.

Table 3. N-gain Score of Spiritual Attitude each Aspect

Aspects of spiritual attitude	Percentage score		*N-gain*	Interpretation
	Pre-test (%)	Post-test (%)		
Praying before and after learning	75	89	0,55	Medium
Being grateful for what have been received	72	87	0,53	Medium
Being serious in doing something	68	84	0,48	Medium
Believing in God's presence	70	84	0,48	Medium
Having awareness of doing religion teaching	65	82	0,47	Medium

The second spiritual aspect is the belief in the presence of God with an N-gain score of 0.53 in the high category, also increasing the percentage of pre-test scores. The use of integrated science literacy-based modules on religious values adds to the students' faith in the presence of the Creator by the application of the material in the science part of life. This is following Djudin (2011), inserting religious values in science lessons can improve students' faith. Overall, the spiritual aspects of students increase in N-gain scores after using this module, which shows that the module effectively improves students' spiritual attitudes.

The results of the self-assessment of students' communication skills per indicator are listed in Table 4.

Table 4. The Percentage of Communication Skill Scores

Indicators of Communication Skill	Average score (%)
Presenting in front of the class	72
Giving opinion, asking, or answering the questions	80
Being active in learning activities	84
Being able to make a decision	77
Average	78
Category	Good

Based on the Table 4, the highest percentage is the indicator of being active in learning activities by 84%, then the skill to ask or answer questions by 80%, being able to make decisions by 77%, and presentation in front of the class by 72% as the lowest score. This shows that communication skills in conducting learning activities are easier for students to do without experiencing significant obstacles. When conducting learning activities students are not required to perform alone, because the activities carried out using modules are mostly done in groups or with the guidance of the teacher. The lowest communication skills are presenting in front of the class, which requires students to have greater knowledge and competence to communicate the material in front of the class. More students who do not dare to do this communication skills because of a lack of confidence to convey the results of learning verbally.

Another cause is the lack of interest in reading, so students do not understand the material. The results of this study are strengthened by research from Natalle and Crowe (2013) that found that appropriate and effective communication skills can be achieved when scan listen to the material and are fluent in speaking. The average overall communication skills score indicates a moderate category, so the use of energy modules in life, based on scientific literacy, internalizes religious values effectively on students' communication skills. Following the results of research from Putranto (2015), Project-Based Learning (PjBL)-oriented science teaching materials on Energy in Life Systems can improve students' communication skills. Yanti et al. (2015) found the use of discovery-inquiry character-based worksheets can improve students' communication skills. Students' communication skills can be trained in the learning process by using learning models and learning resources that integrate religious values.

The use of energy modules in life internalizing religious values influences students' communication skills. Observations in the learning process before using this module show that students are less active, it is not uncommon to express opinions, ask questions or answer teacher's questions, in group activities lack of cooperation, less active in doing things for fear of being wrong and not dare to make decisions, and rarely willing to present in front of the class. After using this module in learning, students begin to actively communicate. The percentage score of students' self-assessment results of the highest results on active indicators in learning activities is 84%. Students become motivated by this module

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because of the story of the struggle of scientists in finding a theory, thus making students more enthusiastic without fear of being wrong in doing activities. The second-high percentage is an indicator of expressing an opinion, asking, or answering a question by 80%. This score shows students dare to express their opinions verbally, also dare to ask or answer questions from the teacher. Feelings of students such as fear, shame, and lack of confidence when asking questions or opinions, which existed before using the module have decreased. Following Göksoy's research (Göksoy, 2014; Pal et al., 2016) showed that lack of confidence, shame, anxiety, and fear is factors that inhibit communication. This module encourages students to be brave with the integration of religious values making students more enthusiastic in learning energy material. The next indicator is being able to make decisions with a score of 77%, showing an increase in students' ability to make decisions that can take appropriate action if during an experiment experiencing problems. The communication skills of the students who scored the lowest on the indicator of presenting in front of the class with a score of 72% showed that some students dared to appear in front of the class presenting the results of their experiments. Although not all students have demonstrated this communication ability, with this module there has been an increase in students' courage to present. The reason for students not presenting in front of the class is the lack of communication between the teacher and students because the teacher does not teach in the class that is the sample of the study. Following the results of Tutkun (2015) research, different communication skills can be influenced by education, parents' attitudes, and relationships with others.

Energy modules in living systems internalize religious values in the form of integrating verses of the Koran and hadiths relating to energy material. This module is organized based on the literacy component of science, the integration of religious values is in the science section as knowledge and science in life. The learning activities in this module consist of 4 parts: (1) material about the meaning of energy, the form of energy and energy sources; (2) food as an energy source and energy transformation in cells; (3) cell metabolism composed of photosynthesis and respiration; (4) food digestion. In the part of science as knowledge, the integration is in the form of verses of the Koran and hadiths that are appropriate to the material in each learning activity. While on the interaction part of science, technology, and society (science in life), the integration is in the form of application of the hadith in daily life or the wisdom of a phenomenon related to science.

The use of energy modules in living systems is stated to be effective if students show an increase in the assessed aspects of religious values (spiritual attitudes) and communication skills, after using this module. Based on the analysis of the results of research on students' spiritual attitudes with an N-gain score of 0.49 in the medium category, it shows that the use of this module is effective for students' religious values. Energy material that is integrated with religious values can enhance students' spiritual attitudes. The findings that strengthen are the results of research by Nurjanah et al. (2019); Saputro (2011); and Yunita et al. (2019), and that state integrating Islamic (religious) values in the module is effective in improving students' religious character. While the communication skills of students with an average score of 78% showed more than 50% of students had improved communication skills. The findings show the module is effective on students' spiritual attitudes and communication skills.

CONCLUSION

Based on the analysis of research data, it can be concluded that the religious value of students increases with an N-gain of 0.49 with a medium category. The energy module in life systems based on scientific literacy integrated on religious values is effective in internalizing students' religious values. The communication skills of students with an average percentage of 78% are included in the good category. The use of modules is effective in internalizing religious values and students' communication skills.

REFERENCES

Astuti, V., Widodo, W., & Kuswanti, N. (2016). Penerapan model pembelajaran berbasis proyek untuk melatihkan keterampilan komunikasi siswa pada materi sistem peredaran darah pada manusia. *Pensa E-Jurnal: Pendidikan Sains*, *4*(03). https://jurnalmahasiswa.unesa.ac.id/index.php/pensa/article/view/16152

Barry, M. (2012). *What skills will you need to succeed in the future*. Phoenix Forward.

Chung, Y., Yoo, J., Kim, S.-W., Lee, H., & Zeidler, D. L. (2016). Enhancing students' communication

ISSN 2406-9205 (print), ISSN 2477-4820 (online)

skills in the science classroom through socioscientific issues. *International Journal of Science and Mathematics Education*, *14*(1), 1–27. https://doi.org/10.1007/s10763-014-9557-6

Deryati, P., Abdurrahman, A., & Maharta, N. (2013). Pengaruh keterampilan berkomunikasi sains menggunakan pendekatan multiple representations terhadap literasi sains siswa. *Jurnal Pembelajaran Fisika*, *1*(2). http://jurnal.fkip.unila.ac.id/index.php/JPF/article/view/252

Diani, R., & Hartati, N. S. (2018). Flipbook berbasis literasi Islam: Pengembangan media pembelajaran fisika dengan 3D pageflip professional. *Jurnal Inovasi Pendidikan IPA*, *4*(2), 234–244. https://doi.org/10.21831/jipi.v4i2.20819

Djudin, T. (2011). Menyisipkan nilai-nilai agama dalam pembelajaran sains: Upaya alternatif memagari aqidah siswa. *Khatulistiwa : Journal of Islamic Studies*, *1*(2), 151–160. https://doi.org/10.24260/khatulistiwa.v1i2.188

East, M. (2015). Taking communication to task – again: what difference does a decade make? *The Language Learning Journal*, *43*(1), 6–19. https://doi.org/10.1080/09571736.2012.723729

El Shinta, Z., Yolida, B., & Marpaung, R. R. (2015). Pengaruh penerapan model PBL terhadap kreativitas dan keterampilan berkomunikasi tertulis siswa. *Jurnal Bioterdidik: Wahana Ekspresi Ilmiah*, *3*(9). http://jurnal.fkip.unila.ac.id/index.php/JBT/article/view/9667

Faizah, S. N. (2020). Pengembangan modul IPA berbasis integrasi Islam dan sains dengan pendekatan inkuiri di MI Salafiyah Kutukan Blora. *At-Thullab : Jurnal Pendidikan Guru Madrasah Ibtidaiyah*, *1*(1), 114. https://doi.org/10.30736/atl.v1i1.80

Göksoy, S. (2014). Teacher candidates' (pedagogical formation students') communication skills. *Creative Education*, *05*(14), 1334–1340. https://doi.org/10.4236/ce.2014.514152

Griffin, P., & Care, E. (2015). *Assessment and teaching of 21st Century skills* (P. Griffin & E. Care (eds.)). Springer Netherlands. https://doi.org/10.1007/978-94-017-9395-7

Hadini, I., & Puspitasari, D. (2012). *Strategi pembelajaran terpadu: Teori, konsep, dan implementasi*. Familia.

Hamzah, F. (2016). Studi pengembangan modul pembelajaran IPA berbasis integrasi Islam – sains pada pokok bahasan sistem reproduksi kelas IX Madrasah Tsanawiyah. *Adabiyah : Jurnal Pendidikan Islam*, *1*(1), 41. https://doi.org/10.21070/ja.v1i1.163

Harris, A., & Hua, Z. (2015). Communication is key: a study of the development of communication key skills in China. *English in Education*, *49*(2), 167–187. https://doi.org/10.1111/17548845.2015.11912538

Hasan, S. H., Wahab, A. A., Mulyana, Y., Hamka, M., Kurniawan, K., Anas, Z., Nurlaili, L., Listiyanti, M., Jarwadi, J., Chatarina, M., Waluyo, H., Wirantho, S. A., Paresti, S., Ismail, A. B., & Indarti, E. (2010). *Pengembangan pendidikan budaya dan karakter bangsa*. Kementerian Pendidikan Nasional, Badan Penelitian dan Pengembangan Pusat Kurikulum.

Irwansyah, M. (2020). Pengaruh bahan ajar sistem reproduksi manusia terintegrasi nilai-nilai alquran terhadap sikap spiritual siswa. *PEDAGOGOS (JURNAL PENDIDIKAN)*, *2*(1), 1–7. https://doi.org/10.33627/gg.v2i1.303

Jamaludin, J., Najib A, A., Dzulkhairi, M., Ariff HO, A. H., & Ismail, N. N. (2014). Integration of Islamic input in medical curriculum – Universiti Sains Islam Malaysia (USIM) experience. *The International Medical Journal of Malaysia*, *13*(2), 73–77. https://journals.iium.edu.my/kom/index.php/imjm/article/view/483

Latifah, S., & Ratnasari, R. (2016). Pengembangan modul IPA terpadu terintegrasi ayat-ayat Al-Qur'an pada materi tata surya. *Jurnal Penelitian Pembelajaran Fisika*, *7*(1). https://doi.org/10.26877/jp2f.v7i1.1150

Maturradiyah, N., & Rusilawati, A. (2015). Analisis buku ajar fisika SMA Kelas XII di Kabupaten Pati berdasarkan muatan literasi sains. *UPEJ Unnes Physics Education Journal*, *4*(1). https://doi.org/10.15294/upej.v4i1.4731

Morreale, S. P., Valenzano, J. M., & Bauer, J. A. (2017). Why communication education is important: a third study on the centrality of the discipline's content and pedagogy. *Communication Education*, *66*(4), 402–422. https://doi.org/10.1080/03634523.2016.1265136

ISSN 2406-9205 (print), ISSN 2477-4820 (online)

Natalle, E. J., & Crowe, K. M. (2013). Information literacy and communication research: A case study on interdisciplinary assessment. *Communication Education*, *62*(1), 97–104. https://doi.org/10.1080/03634523.2012.720690

Nurjanah, F., Triwoelandari, R., & Nawawi, M. K. (2019). Pengembangan bahan ajar tematik terintegrasi nilai-nilai Islam dan sains untuk meningktakan karakter religius siswa. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, *3*(2), 178–181. https://doi.org/10.23969/jp.v3i2.1393

Okmarisa, H., Darmana, A., & Suyanti, R. D. (2016). Implementasi bahan ajar kimia terintegrasi nilai spiritual dengan model pembelajaran problem based learning (PBL) berorientasi kolaboratif untuk meningkatkan hasil belajar siswa. *Jurnal Pendidikan Kimia*, *8*(2), 130–135. https://doi.org/10.24114/jpkim.v8i2.4439

Oktaviani, A. N., & Nugroho, S. E. (2015). Penerapan model creative problem solving pada pembelajaran kalor untuk meningkatkan pemahaman konsep dan keterampilan komunikasi. *UPEJ Unnes Physics Education Journal*, *4*(1). https://doi.org/10.15294/upej.v4i1.4733

Pal, N., Halder, S., & Guha, A. (2016). Study on communication barriers in the classroom: A teacher's perspective. *Online Journal of Communication and Media Technologies*, *6*(1), 103–118. https://www.ojcmt.net/download/study-on-communication-barriers-in-the-classroom-a-teachers-perspective.pdf

Putranto, Y. A. (2015). Pengembangan bahan ajar IPA berorientasi project based learning (PjBL) berbasis information communication technology (ICT) untuk melatihkan komunikasi. *PENSA E-Jurnal: Pendidikan Sains*, *3*(02).

Saavedra, A. R., & Opfer, V. D. (2012). *Teaching and learning 21st century skills: Lessons from the learning sciences*. Asia Society.

Saputro, A. N. C. (2011). Pengintegrasian nilai-nilai relegius dalam buku pelajaran kimia SMA/MA sebagai metode alternatif membentuk karakter insan mulia pada siswa. *Proceeding Biology Education Conference: Biology, Science, Enviromental, and Learning*, *8*(1), 304–310. https://jurnal.uns.ac.id/prosbi/article/view/7324

Sari, D. L., Rusilowati, A., & Linuwih, S. (2015). Pengembangan bahan ajar IPA terpadu berbasis literasi sains bertema perpindahan kalor dalam kehidupan. *UPEJ Unnes Physics Education Journal*, *4*(3). https://doi.org/10.15294/upej.v4i3.9972

Selviani, S., & Anggraini, W. (2018). Pengembangan media pembelajaran majalah fisika sebagai suplemen pembelajaran terintegrasi nilai keislaman. *Indonesian Journal of Science and Mathematics Education*, *1*(1), 79–87. https://doi.org/10.24042/ijsme.v1i1.2478

Sharifirad, G., Etemadi, Z., Jazini, A., & Rezaeian, M. (2012). Knowledge, attitude and performance of academic members regarding effective communication skills in education. *Journal of Education and Health Promotion*, *1*(1), 42. https://doi.org/10.4103/2277-9531.104812

Spektor-Levy, O., Eylon, B.-S., & Scherz, Z. (2009). Teaching scientific communication skills in science studies: Does it make a difference? *International Journal of Science and Mathematics Education*, *7*(5), 875–903. https://doi.org/10.1007/s10763-009-9150-6

Suciati, S., Maridi, M., Dewi, N. K., Subandowo, D., & Sasmito, A. (2020). Effect of Dao Jiang Ping (DJP) model based module on learning result of XI class students. *Journal of Innovation in Educational and Cultural Research*, *1*(1), 30–40. https://doi.org/10.46843/jiecr.v1i1.6

Sugiyono, S. (2012). *Metode penelitian pendidikan: Pendekatan kuantitatif, kualitatif, dan R & D*. Alfabeta.

Susilowati, S. (2017). Pengembangan bahan ajar IPA terintegrasi nilai islam untuk meningkatkan sikap dan prestasi belajar IPA siswa. *Jurnal Inovasi Pendidikan IPA*, *3*(1), 78. https://doi.org/10.21831/jipi.v3i1.13677

Trilling, B., & Fadel, C. (2009). *21st century skills: Learning for life in our times*. Jossey-Bass.

Tutkun, O. F. (2015). Prospective teacher's communication skills level: Intellectual, emotional and behavioral competencies. *The Anthropologist*, *19*(3), 665–672. https://doi.org/10.1080/09720073.2015.11891701

Urwani, A. N., Ramli, M., & Ariyanto, J. (2018). Analisis keterampilan komunikasi pada pembelajaran

ISSN 2406-9205 (print), ISSN 2477-4820 (online)

biologi sekolah menengah atas. *Jurnal Inovasi Pendidikan IPA*, *4*(2), 181–190. https://doi.org/10.21831/jipi.v4i2.21465

Utami, Z. S., Sujarwanta, A., & Santoso, H. (2018). Pengembangan modul biologi yang terintegrasi nilai-nilai ke-Islaman untuk meningkatkan pemahaman dan kesadaran peserta didik pada materi pokok keanekaragaman hayati SMA kelas. *BIOEDUKASI (Jurnal Pendidikan Biologi)*, *9*(2), 166. https://doi.org/10.24127/bioedukasi.v9i2.1809

Widyaningsih, T. S., Zamroni, Z., & Zuchdi, D. (2014). Internalisasi dan aktualisasi nilai-nilai karakter pada siswa SMP dalam perspektif fenomenologis. *Jurnal Pembangunan Pendidikan: Fondasi Dan Aplikasi*, *2*(2). https://doi.org/10.21831/jppfa.v2i2.2658

Yanti, E., Haryani, S., & Supardi, K. I. (2015). Pengembangan bahan ajar koloid bermuatan karakter berbasis discovery-inquiry untuk meningkatkan keterampilan berkomunikasi siswa SMA. *Journal of Innovative Science Education*, *4*(1). https://journal.unnes.ac.id/sju/index.php/jise/article/view/6886

Yunita, N. M., Maridi, M., & Prayitno, B. A. (2019). Pengembangan modul sistem pencernaan berbasis inkuiri terintegrasi sains-Islam untuk meningkatkan religiusitas siswa. *Prosiding Seminar Nasional Lembaga Penelitian Dan Pendidikan (LPP) Mandala*. https://doi.org/10.1234/.v0i0.981

Yuritantri, L. A. (2013). *Pembelajaran dengan metode guided inquiry untuk mengembangkan rasa ingin tahu dan keterampilan komunikasi siswa* [Universitas Negeri Semarang]. https://lib.unnes.ac.id/19771/

Zhang, J., Cheng, M., Guo, N., Xing, A., & Xu, L. (2019). 'Standardized patients' in teaching the communication skill of history-taking to four-year foreign medical undergraduates in the department of obstetrics and gynaecology. *BMC Medical Education*, *19*(1), 108. https://doi.org/10.1186/s12909-019-1541-y

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