International Journal of Instruction e-ISSN: 1308-1470 • www.e-iji.net



July 2022 • Vol.15, No.3 p-ISSN: 1694-609X pp. 913-930

Article submission code: 20210724042454



Accepted: 14/04/2022 OnlineFirst: 15/06/2022

# School-community Collaboration in Inquiry-based Learning to Strengthen Religious Character and Improve Learning Outcome of Students

### Irwandi

University of Muhammadiyah Bengkulu, Indonesia, irwandi@umb.ac.id

# Santoso Santoso

University of Muhammadiyah Bengkulu, Indonesia, santosonursandy@umb.ac.id

### Sakroni

University of Muhammadiyah Bengkulu, Indonesia, sakroniamuis2014@gmail.com

# Marheny Lukitasari

Corresponding author, University of PGRI Madiun, Indonesia, lukitasari@unipma.ac.id

### Rusdi Hasan

Department of Biology, University of Padjadjaran, Indonesia, rusdi@unpad.ac.id

Character education and student, achievement are two main focuses of education in Indonesia in recent years that must be improved. The educators are given the mandate to innovate the learning strategy following the government policy to overcome these problems. This study aims to strengthen the religious character and improve the learning outcome of students through learning innovation that integrated the religious values into learning material that was carried out by involving the school-community collaboration in biology class. This is quasiexperimental research of pretest-posttest non-equivalent control group design that involves 240 participants of four public high schools in Bengkulu Province, Indonesia. The students' religious character and learning outcome were measured using questionnaires and essay tests, respectively. The data obtained were statistically analyzed using the ANCOVA test. The results showed that there was no interaction between the pretest data as a covariate with learning strategies, both on religious character data and student learning outcome. Both religious character and student learning outcomes in the experimental group were significantly higher than in the control group. The results revealed that school-community collaboration in applying inquiry-based learning that integrated religious values can be used as a strategy to strengthen students' religious character as well as improve learning outcomes.

Keywords: school-community collaboration, inquiry-based learning (IBL), character education, learning outcome

**Citation:** Irwandi., Santoso, S., Sakroni., Lukitasari, M., & Hasan, R. (2022). School-community collaboration in inquiry-based learning to strengthen religious character and improve learning outcome of students. *International Journal of Instruction*, *15*(3), 913-930. https://doi.org/10.29333/iji.2022.15349a

# **INTRODUCTION**

On a global scale, character education aims to build the foundation for lifelong learning, support the balance relationships successfully at home, in the community, and workplace, and develop personal values and virtues for sustainable participation in a world globally (Bialik et al., 2015). Character education in the Indonesian national education system refers to a strategy of teaching character values to school members, which includes components of knowledge, awareness or willingness, and actions to implement these values towards God, oneself, others, the environment, and nationality so that they become a complete human (Ministry of National Education of Indonesia, 2011).

Strengthening character education has become a hot topic in Indonesia in recent years. Since it is set as a national program more than a decade ago, teachers of all educational levels in Indonesia must be embedded in their learning subjects as stated on the national education curriculum since 2013. The Indonesian government has made some policies to improve the students' character and learning outcome, such as workshops to increase teacher competency, developing a new curriculum, and improving learning facilities. The efforts to implement character education have been carried out in educational practices. However, many reports revealed the results are still not satisfactory as the introduction of knowledge about norms and values has not changed student' behavior in real terms of daily life as expected (Ash-shidiqqi, 2018; Listyono et al., 2018; Pahrudin et al., 2019) The unsuccessful character education raised the moral problems such as uncontrolled sex behavior, and drug abuse (Aiffah & Religia, 2020). The crimes that evolved children showed increase year by year as The Indonesian Children Protection Commission (KPAI) recorded as many as 3178 children were evolved in cyber-crimes and 6500 children in other crimes during 2016-2020 (KPAI, 2021). This leads to the deviation of the morality of the younger generation from their religious ethics (Ashshidiqqi, 2018) so that the level of their religious attitudes becomes low. The religious programs that were carried out to increase their moral character of student at schools through religious education subjects that only emphasizes the cognitive aspects which lacks consent for religious values, less relevant to the social context, and not integrated with other subjects have not been shown satisfactory results (Zaini et al., 2017). Thus, it is suggested that character education needs real action at school and must involve parents or the community. Biology is considered as one of the suitable subjects with character education, especially those related to religious characters. Learning of biology can allow students to know more about all the traits and characters modeled by living things as Gods' creations (Feierman, 2009). Biology studies living things and their environment so that it can be linked to character formation and is expected that it can strengthen the character quality, as it hopes to strengthen religious characters formation of the students as it is done in religion which is a way of life (Hadi et al., 2015; Irwansyah et al., 2020).

The student character is a form of an affective learning outcome. Besides, the cognitive ability of the students is part of the learning outcome which is an educational problem in Indonesia that needs to be improved upon besides character reformation and

strengthening. As the PISA 2018 result showed that the Indonesian students ranked 70th out of 78 countries for science literation skills (OECD, 2019; Schleicher, 2019) in which is the performance is even lower than the students of most other ASEAN countries (Singapore 2<sup>nd</sup>, Malaysia 48<sup>th</sup>, Brunei Darussalam 50<sup>th</sup>, and Thailand 53<sup>rd</sup>). They possess poor performance in the high order thinking of cognitive abilities. This higher order thinking includes analyzing, evaluating, and creating that are demanded to be possessed by the students in the 21st century. Students' poor performance in higherorder thinking skills will make them to have difficulty in solving some problems in the real life issues that are increasingly becoming complex in the era of globalization (Bialik et al., 2015). This condition is a challenge to stakeholders (policymakers or practitioners) in education in Indonesia that will be used to develop learning strategies that may foster high order thinking skills in students' learning outcomes. This is because learning strategy being a pedagogical competence that must be owned and developed by teachers as an art of teaching. Strong pedagogy requires learning strategies that include specific ways in which learning goals can be achieved (Limbach & Waugh, 2010; Singh et al., 2020).

Student-centered learning strategies are recognized as one of an effective ways to develop student's higher-order thinking that can be implemented and adapted to the class condition, student grade, and school environment (Emaliana, 2017; Hasibuan, 2016; Kurniawati, 2019; Singh et al., 2020; Yen & Halili, 2015; Zulfikar, 2018). Inquiry-based learning (IBL) is one of the student-centered learning strategies that emphasize reflective investigations and interesting findings in the teaching and learning process, the process-oriented rather than content, the concept rather than facts (Gholam, 2019; Shanmugavelu et al., 2020). IBL benefits to bring students getting practical experience that integrated with learning so that the student acquires the dept understanding to enhance their knowledge and to think critically to solve the problem (Bruder & Prescott, 2013; Education Development Center, 2016; Gholam, 2019; Khalaf & Zin, 2018; Ryan & St-Laurent, 2016; Spronken-Smith, 2008).

Many studies related to the IBL application to improve student learning outcome has been widely reported (Khalaf & Zin, 2018; Rohimin et al., 2020; Saunders-Stewart et al., 2012; Sever & Güven, 2014; Utami & Sundari, 2019). On the other hand, the learning strategies for fostering student character (Ash-shidiqqi, 2018; Listyono et al., 2018; Sokip et al., 2019) as well as the integration of religious values into learning mater to improve learning outcomes (Hidayat et al., 2020; Pahrudin et al., 2019; Purwati et al., 2018) in Indonesia have also been reported. However, so far none of them involved community collaboration in the classroom in the implementation of IBL that integrates character education into learning topics. That research concerning IBL implementation to improve student achievement and the application of learning strategies in strengthening student character especially religious character are carried out separately. Therefore, it is necessary to conduct the study that involves community personnel outside the school that is represented by a professional, expert, or practitioner who possesses good knowledge of the related subject material as the form of school-community collaboration in the implementation of inquiry-based learning (SCC-IBL) as

independent variable, which is objected to strengthen the students' religious character and to improve the students' learning outcome as dependent variables.

In this study, the community personnel are the clerics who represent the figure of religious character in the society and have good knowledge or background in biology. The study focused on the topic of Ecosystems that study the interaction of living things including humans in daily life or on a global scale of the environment. Thus, students can directly apply their understanding of this topic and the values of a religious character that they acquire in the classroom and as the result of their interaction with the environmental issues of the community in the context of biology. The teachers and clerics collaborated to facilitate students in inquiry learning strategy. Students learned and collaborated with their peers, teachers, and clerics through the IBL strategy in the classroom. By bringing the clerics who collaborate with teachers in the classroom, it was expected to provide benefits for the students to develop learning outcomes as well as strengthen religious character in their learning process.

# METHOD

#### **Research Design**

This study employed quantitative methods due to correlated with the statistical analysis of typically numerical data (Creswell, 2014). This was quasi-experiment research of pretest-posttest non-equivalent control group design (Fraenkel et al., 2012; Gopalan et al., 2020). The research group consists of one experimental group and one control group. The control group was the students who engaged classroom with the conventional simple cooperative learning, while the experiment group was the students who engaged classroom with the inquiry-based learning through school-community collaboration (SCC-IBL). Based on Fraenkel et al. (2012), the design of the quasi-experiment that applied in this study is shown below.

| Experiment<br>Group | <b>O</b> 1 | Х | <b>O</b> 2            | Notes:<br>O <sub>1</sub> = pretest of religious character and cognitive skill<br>O <sub>2</sub> = pretest of religious character and cognitive skill<br>X = inquiry strategy with extended community |
|---------------------|------------|---|-----------------------|--|
| Control<br>Group    | 01         | - | <b>O</b> <sub>2</sub> | learning   |

Figure 1

Pretest-posttest non-equivalent control group design of this study

# The Participants and Sampling Procedure

The study was carried out at the senior high schools in Bengkulu city, the capital of Bengkulu Province, Indonesia. Four senior high schools were randomly chosen as the sample from fourteen public high schools in Bengkulu City. Thereafter, two classes of tenth-grade students in each school were chosen randomly, each for control and experiment groups. Thus, the participants in each school consisted of one control group and one experimental group. In total, 240 participants evolved in this study. Either control or experiment group shares an equal number of 120 participants.

# Instruments

The religious character questionnaire and the cognitive test were two types of instruments used to collect data in this study.

### The Questionnaire of religious character

We constructed the religious character questionnaire that contained 22 statements of the character of religious attitudes. The questionnaire contains faith and piety attitudes based on Islamic religion. Students were asked to respond to each item based on the four Likert scales. The Likert-type scale is widely used as a survey tool in studying popular opinion that consists of a series of statements that explain the content of the construct being measured that represent a scale regarding opinions, beliefs, judgments, or preferences (Warmbrod, 2014). The weighting value of the questionnaires in this study are (1) Strongly Disagree, (2) Disagree, (3) Agree, and (4) Strongly Agree for positive structure, but otherwise for negative structure.

The validity of religious character questionnaires in this study includes construct validity (Bolarinwa, 2015; Oktavia et al., 2018) were assessed. Face validity and content validity were assessed by three parties, two experts from different universities - each a professor in biology education and Islamic religious education, and by practitioners from each school evolved in the study. The items that are declared unworthy by the experts will be revised until they are worthy. The instrument was then trialed on 30 students to measure the construct validity by calculating the Pearson's correlation coefficient r of the scores of students' responses for an item to their total scores. The reliability of questionnaires was measured by Cronbach's alpha coefficient reliability of the instrument with the value of 0.70. Validity and reliability coefficients were interpreted according to (Saad et al., 1999). The invalid and/or unreliable questionnaires items that resulted from the trial were revised. The questionnaires were delivered before and after the experiment was carried out.

### Cognitive Test

The learning outcome was measured using an open-ended essay test that consisted of 20 questions of cognitive abilities based on the revised Bloom taxonomy (Anderson et al., 2001). The test composition consisted of 70% high-order thinking (Analyzing, Evaluating, Creating) and 30% low-order thinking (Remembering, Understanding, Applying) of cognitive skills. The validity and reliability procedures of each test item were measured as in the questionnaire instrument. The invalid and unreliable items were revised until become valid and reliable. Validity and reliability coefficients were interpreted according to (Saad et al., 1999). The cognitive test was delivered to the student as a pretest and posttest. The duration of student to answer the test was 45 minutes.

# Learning Procedure

The learning strategy in the control group was the conventional simple cooperative learning, while in the experiment group was inquiry-based learning through schoolcommunity collaboration (SCC-IBL). Since the research was carried out to strengthen the religious character of students as one of the objectives beside improving learning outcome, so the community members who were invited to collaborate with a teacher in the classroom were the clerics or religious leaders as professional personnel who possess good knowledge of biology. Teacher-cleric collaborated from creating the learning plan to conducting the learning process in the biology classroom on the topic of Ecosystem consisted of the ecosystem compounding components, the organization of life and patterns of interaction, the types of ecosystem, and the damage to ecosystems and their impact on human life.

# **Data Analysis**

We statistically determined the effect of inquiry-based learning through the collaboration of teacher and professional community on the students' character and learning outcome using analysis of covariance (ANCOVA) in which the pretest data was considered as a covariate. The IBM-SPSS ver. 26 software was used to assist statistical data analyses with a p-value of <0.05 was considered significant for all tests.

# FINDINGS

# Validity and reliability of the instruments

The research instrument has a key role to gain accurate data on this study. Thus, we begin this result with the validity and reliability of the instruments were used. The validity result of the questionnaires assessed by the three parties were 76.6 (proper), 98.9 (very worthy), and 92.0 (very worthy) from expert 1, expert 2, and practitioner, respectively. The construct validity of questionnaires results based on Pearson's correlation coefficients to the p-values showed that 20 of 22 items were initially invalid. We revised the two items (numbers 2 and 17) so that all the items have r sig value < 0.05 and were valid. The average sig value of 22 items was less the 0.01 (strongly valid). The reliability coefficient value of questionnaires was 0.92 (Excellent) so that 22 questionnaires of religious character can be used in this study.

The validity results of the cognitive test item were 84 (worthy), 95.1 (very worthy), and 94.8 (very worthy) from expert 1, expert 2, and practitioner, respectively. The construct validity calculation showed that 18 questions were valid (r-sig value < 0.05, ranged from 0.00-0.031). Two invalid questions are revised until the valid requirements are met so that they could be used in this study. The reliability test shows that the questions used to measure students' learning outcomes have the Cronbach Alpha coefficient of 0.843 (Good) so that the instrument was reliable to be used in this study.

# **Students' Religious Characters**

Table 1 shows the results of students' religious character in either pretest or posttest as well as the comparison between control and experiment groups of students. Descriptively the religious character score of the experiment group students who treated with SCC-IBL is higher than that of the control group.

### Table 1

The scores of students' religious character in control and experiment groups either in pretest or posttest

| Sampling Group              | Ν   | Scores  |         |         | Std.      | Variance |  |
|-----------------------------|-----|---------|---------|---------|-----------|----------|--|
| Sampling Group              |     | Minimum | Maximum | Mean    | Deviation | variance |  |
| Control Group (Pretest)     | 120 | 40.00   | 75.00   | 57.7167 | 7.87847   | 62.070   |  |
| Experiment Group (Pretest)  | 120 | 30.00   | 75.00   | 56.5667 | 9.32759   | 87.004   |  |
| Control Group (Posttest)    | 120 | 57.00   | 76.00   | 66.8917 | 4.26003   | 18.148   |  |
| Experiment Group (Posttest) | 120 | 50.00   | 85.00   | 70.1667 | 7.01778   | 49.249   |  |

#### Table 2

ANCOVA Tests of the affect learning strategy on the students' religious character

| Dependent variable. Crimi | CICIER THEOL            |     |             |         |      |
|---------------------------|-------------------------|-----|-------------|---------|------|
| Source                    | Type III Sum of Squares | df  | Mean Square | F       | Sig. |
| Corrected Model           | 1644.067 <sup>a</sup>   | 2   | 822.034     | 27.753  | .000 |
| Intercept                 | 16047.067               | 1   | 16047.067   | 541.781 | .000 |
| LEARNING STRATEGY         | 751.982                 | 1   | 751.982     | 25.388  | .000 |
| COVARIATE (Pretest)       | 1000.530                | 1   | 1000.530    | 33.780  | .000 |
| Error                     | 7019.729                | 237 | 29.619      |         |      |
| Total                     | 1135763.000             | 240 |             |         |      |
| Corrected Total           | 8663.796                | 239 |             |         |      |
| D.O. 1 100 (11'           | 1 D G 1 100             |     |             |         |      |

a. R Squared = ,190 (Adjusted R Squared = ,183)

The ANCOVA test result (Table 2) shows the Sig value of the learning strategy is 0.00, less than the p-value of 0.05. It shows that learning strategy affected the quality of students' religious character. The SCC-IBL significantly strengthens the religious character of the students compared to the conventional learning in the control group. The improvement of religious character value also correlated with its pretest value as indicated by the Sig value of covariate of 0.00, less than the p-value of 0.05.

# The Students' Learning Outcome

The following are the results of students' learning outcome that are represented by cognitive abilities scores in either pretest or posttest as well as the comparison between control and experiment groups of students. Table 3 shows the scores of students' learning outcome of an experiment group of students who experienced SCC-IBL is descriptively higher than that of the control group.

#### Table 3

The scores of students' learning outcomes in control and experiment groups either in pretest or posttest

| Sampling Group             | N   | Scores  |         |         | Std.      | Variance     |  |
|----------------------------|-----|---------|---------|---------|-----------|--------------|--|
| Sampling Group             |     | Minimum | Maximum | Mean    | Deviation | v an and the |  |
| Control Group (Pretest)    | 120 | 15.00   | 45.00   | 25.4167 | 7.49183   | 56.127       |  |
| Experiment Group (Pretest) | 120 | 10.00   | 45.00   | 26.0833 | 8.10082   | 65.623       |  |
| Control Group (Posttest)   | 120 | 47.00   | 81.00   | 68.3000 | 12.23138  | 149.607      |  |
| Experiment Group Posttest) | 120 | 51.00   | 96.00   | 85.2917 | 11.12677  | 123.805      |  |

The result of the ANCOVA test to analyze the effects of SCC-IBL on the students' learning outcome is shown in Table 4. The Sig value of the learning strategy is 0.00, less than the p-value of 0.05. It shows that learning strategy affected the students' cognitive skills. The SCC-IBL significantly improves the scores of cognitive skills of the students compared to the conventional learning in the control group. The increase of cognitive skills also correlated with its pretest value as indicated by the Sig value of covariate of 0.007, less than p-value 0.05. It's meant the students who got higher scores at the pretest have higher scores at the posttest.

### Table 4

ANCOVA Tests of the effect learning strategy on the students' learning outcome Dependent Variable: LEARNING OUTCOME

|                     | Type III Sum of | •   | Mean      |         |      |
|---------------------|-----------------|-----|-----------|---------|------|
| Source              | Squares         | df  | Square    | F       | Sig. |
| Corrected Model     | 3915.962ª       | 2   | 1957.981  | 14.707  | .000 |
| Intercept           | 85281.340       | 1   | 85281.340 | 640.562 | .000 |
| COVARIATE (Pretest) | 982.958         | 1   | 982.958   | 7.383   | .007 |
| LEARNING_STRATEGY   | 2788.218        | 1   | 2788.218  | 20.943  | .000 |
| Error               | 31553.034       | 237 | 133.135   |         |      |
| Total               | 1272583.000     | 240 |           |         |      |
| Corrected Total     | 35468.996       | 239 |           |         |      |
|                     |                 |     |           |         |      |

a. R Squared = ,110 (Adjusted R Squared = ,103)

# DISCUSSION

# The Influence SSC-IBL on Strengthening Students' Religious Character

The results of this study indicate that descriptively both the control and the experimental groups showed an increase in the values of religious characters of students after experiencing the learning process (posttest) that integrated religious aspects into the biological topic compared to that value before the learning process or pretest (Table 1). However, statistical analysis revealed that in the experimental group where the students experienced the inquiry learning process that involved collaboration between teachers and professional elements (the clerics) from the community, it significantly improved the quality of students' religious character higher than the control group which carried out the conventional learning process (Table 2). This finding shows that the integration of the character of religious values biology learning can strengthen the character of students' religious attitudes.

Biology learning is closely related to religious attitudes because it studies life or living organisms and their vital processes in which humans who have religious behavior as their characteristics are included (Feierman, 2009; Peterson & Venema, 2021). Although there is a topic in biology that is considered to conflict with religious beliefs such as in Islam, Christianity, and Judaism (Barnes et al., 2017; Kosasia & Sikolia, 2015; Zuckerman et al., 2013) but other topics are in harmony with the teachings of these religious. Therefore, biology is more appropriate to be considered as a helpful friend in religious beliefs (Murphy & Schloss, 2009). The teachers can build the students' religious character through moral values that are packaged in the learning

process so that it brings students to know more about all the traits and characters that are modeled by living things as God's creation. Biology learning strategy can be built based on character education to shape the better attitudes of students. The character values in the Islam religion that are contained in the Qur'an and Hadith can potentially be integrated into the biology learning process (Retnowati et al., 2020) as motivation, explanation, and reflection of moral values related to biological material (Listyono et al., 2018) through Islamic pictures media (Pahrudin et al., 2019). The result of this study revealed that the integration of Islamic values in the learning process strengthens the religious characters of faith and piety. This finding supports the study of the integration of faith and learning in the Christian higher education that positively impacts the personal faith of students and grows the students' understanding of the biblical view in the biological context (Savarirajan & Fong, 2019), and the study that cultivated character values through the religious-based learning for special need students of elementary school (Damayanti & Irniasari, 2020).

The improvement of students' religious character in this study was even higher when the learning process involved a collaboration of the community with the inquiry learning strategy (Table 1). The involving and collaboration of clerics as a professional from the community in the learning process extended learning community in the classroom that usually consisted of a teacher and learners. This collaboration led students to a learning experience with broader insights because the clerics as expert figures from these community members can more deeply provide real examples of character values that are integrated by the teacher in their subject matter in the practice of their daily life. The curriculum and learning task can improve by bringing the community member into the school because when teachers have the opportunity to collaborate in inquiry learning on a related lesson, a collection of wisdom about teaching will be generated that can be shared widely so that the quality of learning becomes even better (Basibas et al., 2021; Hord, 1997).

School-community partnership activities promoted student education, family welfare, and community interests and enhanced students' educational experiences while creating bonds between schools and communities (Casto, 2016). School-community partnerships can serve many purposes from improving student achievement to developing a community (Casto et al., 2015). The school-community partnership in the context of teachers-clerics collaboration in this study was carried out by bringing into school the community member who can contextually connect their expertise with the biology learning topics in the inquiry-based learning that students engaged. The cleric is a practitioner, religious leader, and professional member of the community fluently connect the subject matter and the daily life religious character values that the teacher introduced with the related proposition in either the Qur'an or Hadith. This collaboration amplifies the benefits of inquiry-based learning that have been widely reported in many subjects where the implementation only involves the educators and learners by emphasizing its influence on learning outcomes and student activity (Hasan et al., 2019; Mulyana et al., 2018; Ong et al., 2020; Sever & Güven, 2014) The success of inquiry learning is rooted in the fact that students are at the forefront of their learning process through investigation and dialogue within their learning communities (Ryan & StLaurent, 2016). In this study, the involvement of the cleric besides their classmates and teacher in the classroom made the dialog wider to the religious values related to the biology topics that students being discussed. During this learning experience, the students found deeper knowledge of religious values and their connectivity with biology material so that strengthen the students' religious character.

# The Influence SSC-IBL on Students' Learning Outcomes

This study revealed that the SCC-IBL application significantly improved the learning outcomes of the students compared to the conventional learning in the control group by the score margin of 17 from an average score of 68 in the control group to 85 in the experiment group (Table 3). The positive impact of IBL on student learning outcomes supports several previous studies on various subjects and levels of education in Indonesia, Malaysia, and Thailand (Anuar et al., 2017; Biringan et al., 2019; Ong et al., 2020; Shanmugavelu et al., 2020; Tornee et al., 2017). The positive impact of IBL on learning outcomes due to IBL broadly facilitates student learning by providing a variety of resources, tools, media, and learning environments that enable students to build knowledge and understanding through exploration and investigation to ponder and discuss problem-solving solutions on the topic being studied in class (Ryan & St-Laurent, 2016; Shanmugavelu et al., 2020) through systematic steps of the scientific method that leads students to possess a scientific attitude (Mulyana et al., 2018). IBL provides students with a rich and immersive learning experience so that it can sharpen students' thinking (Harlen, 2013; Nunaki et al., 2019; Palupi et al., 2020; Shanmugavelu et al., 2020). When students could explore multiple questions through an inquiry-based learning model, much of their knowledge is acquired during the research process. Therefore, learning through inquiry strategies not only helps satisfy students' curiosity but also acquires more useful knowledge and skills to contribute to society (Saunders-Stewart et al., 2012).

The application of IBL challenges the students' activeness and optimize their study activities to gain a high-level understanding of the topics they studied. Students were assisted when faced with a real and meaningful problem from a certain unfamiliar case, so they were free to collect data and determine appropriately the solution in solving the problem. IBL provides opportunities for students to develop their ideas in science learning progressively which students use in answering questions about certain objects, events, or phenomena. The teacher's role is to help students develop conceptual understanding and inquiry and inquiry skills at the same time (Harlen, 2013). Inquiry learning can involve students optimally on the importance of science to solve the problems at hand to make the students participate according to their ability level even though they still need help from the teacher (Saunders-Stewart et al., 2012). The students were trained to think flexibly which can be seen from the way they formulated problems and hypotheses while studying biology material provided by the teacher so that they become accustomed to using higher-order thinking skills. Therefore, IBL can improve learning outcomes and has a higher effect on students' cognitive achievement when compared to traditional learnings.

A significant improvement of student learning outcomes was not only shown by the difference in posttest scores between the control group (68) and the experimental group (85), but also by the increase in the pretest-posttest scores. The increase in the score for the SCC-IBL group was 59 (from 26 on the pretest to 85 on the poster) while for the control group it was 43 (from 25 on the pretest to 68 on the posttest). The comparison score of the students' learning outcomes as a learning outcomes between the SCC-IBL group and the control group up to 17 points in this study is higher than several previous studies (Bertka et al., 2019; Panasan & Nuangchalerm, 2010; Sa'adah et al., 2017; Tiwow, 2019) with the improvement score range from 4 to 11 that implemented inquiry by educators without the involvement of the community outside school. This finding indicates that the school-professional community collaboration in the context of teachercleric collaboration in this study strengthens the positive impact of IBL on student learning outcomes. The collaboration of the teacher-cleric to implement IBL expanded the learning community in the classroom, created an interesting learning atmosphere, and enriched learning resources for students. In addition to all stages of the learning process in the classroom, the cleric was also involved in the preparation of the lesson plan. The clerics who were invited to school were community personnel who were religious leaders of Islam as well as have good knowledge of biology and were capable to relate the biological material studied by students with religious characters and its application in daily life. Therefore, the application of SCC-IBL can both improved learning outcomes and strengthened the faith and piety religious character of students.

The improvement of student learning outcomes in this study shows one of the positive impacts of the benefits and importance of collaboration with the community in the learning process. School-community collaboration is one of six types of schoolcommunity partnerships, namely parenting, communicating, volunteering, decision making, and collaborating with the community (Sanders, 2006). School-community partnership refers to relationships between schools and community members or organizations that are built to enhance students' social, emotional, and intellectual development for gaining success both in school and in society (DePetris & Eames, 2017; Epstein, 2011; Hausburg, 2017; Kim & Gentle-Genitty, 2020). School-community collaboration challenges traditional ideas about the importance of knowledge and democratizes the knowledge-building process so that it works as a mechanism for the social transformation of society (Hausburg, 2017). The learning process of children can be carried out through various social and educational contexts, but students' best academic success can be achieved through the cooperation and support of schools, families, and communities (Anderson-Butcher et al., 2008; Epstein, 2011; Willems & Gonzalez-DeHass, 2012). Our finding reveals that school-community collaboration plays an important role in student learning success through providing support and resources to meet student and school needs that often go beyond what is normally available in school. The school is a system that consists of the teachers, staff, students, as the core of a learning community in the school. The involvement of the cleric from community personnel who was invited into the classroom to collaborate with the teacher by implementing IBL extended the learning community in the school, enriched the learning resource, broadened the learning environment, increased students' curiosity and activeness in the learning process, and improved students' learning outcomes.

School-community collaboration in implementing inquiry-based learning in this study can be a strategy in strengthening students' religious character and improving their learning outcomes. Of course, there will be obstacles in establishing collaboration and partnerships between schools and the community, but school leadership and community awareness of the need for the participation of both parties to produce quality learning will be a strong impetus for establishing school-community partnerships in various forms that are mutually beneficial to both parties. It is a challenge in further study to integrate character learning into every subject at school that involves wider community personnel continuously or scheduled in certain events expected to have a significant impact on strengthening students' character as well as their learning achievement.

# CONCLUSION

Inquiry-based learning provides students to be involved in the learning process through investigation and dialogue with friends and teachers as a learning community. Thus, the inquiry process allows students to build knowledge and to learn through their experience directly which contrasts with traditional learning where the teacher is only given the information. School-community collaboration by inviting clerics to collaborate with teachers in planning and implementing inquiry-based learning that integrates the religious character of faith and piety creates a positive atmosphere in the classroom. The invited clerics are the professional element in the community, as religious leaders who represent excellent religious character and have good knowledge about biology so that they can connect the concepts in the biology material being studied by students with the values of religious character and their application in daily life through discussions in the learning process.

In inquiry learning, teachers and clerics have a role as facilitators for students to reflect, process, and evaluate what they find in the learning process. In turn, this social interaction among students and with the facilitators allows them to develop their higherorder thinking skills which make students think critically and attracts them to continue their investigations. Teachers and clerics help them grow as learners and guide students to find the correlation of biological concepts they learn with religious character values. Therefore, school-community partnership through the teacher-cleric collaboration in implementing inquiry learning that integrates religious character is effective to strengthen the quality of the students' religious character of faith and piety to God as well as improving student cognitive learning outcomes.

# ACKNOWLEDGEMENT

The authors would like to thank the Directorate General of Higher Education, Ministry of Education and Culture of the Republic of Indonesia for funding this research.

# REFERENCES

Aiffah, G. I., & Religia, W. A. (2020). Child Sexual Abuse Prevention Program: Reference to the Indonesian Government. *Jurnal Promkes*, 8(2), 238.

https://doi.org/10.20473/jpk.v8.i2.2020.238-252

Anderson-Butcher, D., Lawson, H. A., Bean, J., Flaspohler, P., Boone, B., & Kwiatkowski, A. (2008). Community collaboration to improve schools: Introducing a new model from Ohio. *Children and Schools*, *30*(3), 161–172. https://doi.org/10.1093/cs/30.3.161

Anderson, L. W., Krathwohl Peter W Airasian, D. R., Cruikshank, K. A., Mayer, R. E., Pintrich, P. R., Raths, J., & Wittrock, M. C. (2001). *A Taxonomy for Learning, Teaching, and Assessing a Revision of Bloom's Taxonomy of Educational Objectives*. Addison Wesley Longman, Inc. https://www.uky.edu/~rsand1/china2018/texts/Anderson-Krathwohl - A taxonomy for learning teaching and assessing.pdf

Anuar, N. S. B. S., Sani, S. S. B., Ahmad, C. N. B. C., Damanhuri, M. I. B. M., & Borhan, M. T. Bin. (2017). The trend in inquiry-based learning (IBL) research from many perspectives: A systematic review. *AIP Conference Proceedings*, *1847*(February 2020). https://doi.org/10.1063/1.4983916

Ash-shidiqqi, E. A. (2018). The Analysis of Character Education in Indonesia. *International Journal of Humanities, Art and Social Studies (IJHAS), 3*(4), 39–46.

Barnes, M. E., Truong, J. M., & Brownell, S. E. (2017). Experiences of Judeo-Christian Students in Undergraduate Biology. *Https://Doi.Org/10.1187/Cbe.16-04-0153*, *16*(1). https://doi.org/10.1187/CBE.16-04-0153

Basibas, A. T., Fabiosa, A. R., Aconga, M. M. G., & Tentativa, J. R. (2021). Strengthening Community Linkages: Basis for an Intervention Program. *Journal of Scientific Research and Reports*, 65387(2), 48–59. https://doi.org/10.9734/JSRR/2021/V27I130347

Bertka, C. M., Pobiner, B., Beardsley, P., & Watson, W. A. (2019). Acknowledging students' concerns about evolution: a proactive teaching strategy. *Evolution: Education and Outreach 2019 12:1*, *12*(1), 1–28. https://doi.org/10.1186/S12052-019-0095-0

Bialik, M., Bogan, M., Fadel, C., & Horvathova, M. (2015). Character Education for The 21st Century. In *Center for Curriculum Redesign* (Issue February). Center for Curriculum Redesign. http://curriculumredesign.org/wp-content/uploads/CCR-CharacterEducation\_FINAL\_27Feb2015.pdf

Biringan, J., Pangalila, T., Rattu, J. A., & Limeranto, R. F. (2019). Improving Student Learning Outcomes through the Application of Civics Inquiry Learning. *International Journal of Innovation, Creativity and Change. Www.Ijicc.Net*, *10*(7). www.ijicc.net

Bolarinwa, O. A. (2015). Principles and Methods of Validity and Reliability Testing of Questionnaires Used in Social and Health Science Researches. https://doi.org/10.4103/1117-1936.173959

Bruder, R., & Prescott, A. (2013). Research evidence on the benefits of IBL. *ZDM*, 45, 811–822. https://doi.org/10.1007/s11858-013-0542-2

Casto, H. G. (2016). "Just One More Thing I Have to Do": School-Community Partnerships. *School Community Journal*, 26(1), 139–162. http://www.schoolcommunitynetwork.org/SCJ.aspx

Casto, H. G., Sipple, J. W., & McCabe, L. A. (2015). A Typology of School– Community Relationships: Partnering and Universal Prekindergarten Policy. *Educational Policy*, *30*(5), 1–29. https://doi.org/10.1177/0895904814557770

Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (4th ed.). SAGE Publications Inc.

Damayanti, V. V. W., & Irniasari, R. (2020). Religious Based Learning as a Form of Cultivating Character Values in Children with Special Needs at SDLB Jenangan, Ponorogo. *International Journal of Emerging Issues in Early Childhood Education*, 2(1), 1–10. https://doi.org/10.31098/ijeiece.v2i1.114

DePetris, T., & Eames, C. (2017). A Collaborative Community Education Model: Developing Effective School-Community Partnerships. *Australian Journal of Environmental Education*, 33(3), 171–188. https://doi.org/10.1017/aee.2017.26

Education Development Center. (2016). Inquiry-Based Learning: an Approach To Educating and Inspiring Kids. *Youth Learn*, 1–11. http://youthlearn.org/wp-content/uploads/Inquiry\_Based\_Learning.pdf

Emaliana, I. (2017). Teacher-centered or Student-centered Learning Approach to Promote Learning? *JJurnal Sosial Humaniora*, *10*(2), 59–70. https://doi.org/10.12962/J24433527.V10I2.2161

Epstein, J. (2011). School, Family, and Community Partnerships: Preparing Educators and Improving Schools. Boulder, CO: Westview Press. https://doi.org/https://doi.org/10.4324/9780429494673

Feierman, J. R. (2009). *The Biology of Religious Behavior: The Evolutionary Origins of Faith and Religion*. Praeger Frederick. https://doi.org/10.1007/978-1-4020-8265-8\_135

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). *How to Design and Evaluate Research in Education* (8th ed.). Mc Graw HIII.

Gholam, A. (2019). Inquiry-Based Learning: Student Teachers' Challenges and Perceptions. *Journal of Inquiry and Action in Education*, 10(2), 112–133.

Gopalan, M., Rosinger, K., & Ahn, J. Bin. (2020). Use of Quasi-Experimental Research Designs in Education Research: Growth, Promise, and Challenges. *Review of Research in Education*, 44(1), 218–243. https://doi.org/10.3102/0091732X20903302

Hadi, K., Dazrullisa, Manurung, B., & Hasruddin. (2015). Development of Biological Teaching Materials Based on Local Wisdom Integrated Character Education and Problem Based Learning Models for Senior High School in Aceh Barat-Indonesia. *International Journal of Research and Review*, 2(6), 343–347.

Harlen, W. (2013). Inquiry-based learning in science and mathematics. Review of

science, mathematics and ICT education. *Review of Science, Mathematics and ICT Education*, 7, 9–33.

Hasan, R., Lukitasari, M., Juniarti, V., & Irwandi, I. (2019). Improving student problemsolving skill and cognitive learning outcome through the implementation of problembased learning. *Jurnal Bioedukatika*, 7(1), 18–26. http://journal.uad.ac.id/index.php/BIOEDUKATIKA/article/view/5332/3110

Hasibuan, F. W. (2016). Problematika Teacher-Centre Learning: Studi Terhadap Institusi Pendidikan Di. Jurnal Pendidikan Terbuka Dan Jarak Jauh, 3(4), 1–9.

Hausburg, T. (2017). School-Community Collaboration: An Approach to Integrating and Democratizing Knowledge. *Penn GSE Perspectives on Urban Education*, 17, 1–5.

Hidayat, T., Rizal, A. S., Abdussalam, A., & Fawwaz, A. G. (2020). Designing Islamic Values Integration into Sociology Learning. *Jurnal Pendidikan Islam*, *6*(1), 37–56. https://doi.org/10.15575/jpi.v6i1.8119

Hord, S. M. (1997). *Professional Learning Communities: Communities of Continuous Inquiry and Improvement*. Southwest Educational Development Laboratory Reprinted. www.sedl.org

Irwansyah, M., Ferawati, F., Suryani, E., Olahairullah, O., Ariyansyah, A., Nurfathurrahmah, N., & Rubianti, I. (2020). Developing biology learning tools based on character education integrated with sustainable local wisdom to enhance 21st-century attitude of students. *Journal of Physics: Conference Series*, *1521*(4). https://doi.org/10.1088/1742-6596/1521/4/042017

Khalaf, B. K., & Zin, Z. B. M. (2018). Traditional and inquiry-based learning pedagogy: A systematic critical review. *International Journal of Instruction*, *11*(4), 545–564. https://doi.org/10.12973/iji.2018.11434a

Kim, J., & Gentle-Genitty, C. (2020). Transformative school–community collaboration as a positive school climate to prevent school absenteeism. *Journal of Community Psychology*, *48*(8), 2678–2691. https://doi.org/10.1002/jcop.22444

Kosasia, A., & Sikolia, S. (2015). Biology Students' Religious Beliefs: A Hidden Variable Learning of Evolution. *Quest Journals Journal of Research in Humanities and Social Science*, *3*(11), 2321–9467. www.questjournals.org

KPAI. (2021). Data Kasus Pengaduan Anak 2016 – 2020 / Bank Data Perlindungan Anak. KPAI. https://bankdata.kpai.go.id/tabulasi-data/data-kasus-pengaduan-anak-2016-2020

Kurniawati, T. (2019). Improving Students' Higher Order-thinking Skills Through Problem-based Learning in Introduction to Microeconomics Course. *KnE Social Sciences*, *3*(11), 9. https://doi.org/10.18502/KSS.V3I11.3995

Limbach, B., & Waugh, W. (2010). Developing higher level thinking. *Journal of Instructional Pedagogies*, *3*, 1–9. https://aabri.com/manuscripts/09423.pdf

Listyono, Supardi, K. I., Hindarto, N., & Ridlo, S. (2018). Methods of Integrating Islamic Values in Teaching Biology for Shaping Attitude and Character. *JPhCS*, *983*(1), 012178. https://doi.org/10.1088/1742-6596/983/1/012178

Ministry of National Education of Indonesia. (2011). *Guidline of the Implementation of Character Education*. Ministry of National Education.

Mulyana, S., Rusdi, R., & Vivanti, D. (2018). The Effect of Guided Inquiry Learning Model and Scientific Performance on Student Learning Outcomes. *Indonesian Journal of Science and Education*, 2(1), 44–48. https://doi.org/10.31002/IJOSE.V2I1.596

Murphy, N., & Schloss, J. P. (2009). Biology and Religion. In M. Ruse (Ed.), *The Oxford Handbook of Philosophy of Biology* (pp. 546–569). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780195182057.003.0024

Nunaki, J. H., Damopolii, I., Kandowangko, N. Y., & Nusantari, E. (2019). The effectiveness of inquiry-based learning to train the students' metacognitive skills based on gender differences. *International Journal of Instruction*, *12*(2), 505–516. https://doi.org/10.29333/iji.2019.12232a

OECD. (2019). PISA 2018 Results: What Students Know and Can Do: Vol. I. OECD Publishing. https://doi.org/10.1787/5f07c754-en

Oktavia, R., Irwandi, I., Rajibussalim, T., Mentari, M., & Mulia, I. S. (2018). Assessing the Validity and Reliability of Questionnaires on The Implementation of Indonesian Curriculum K-13 in STEM Education. *Journal of Physics: Conference Series, 1088*, 12014. https://doi.org/10.1088/1742-6596/1088/1/012014

Ong, E. T., Keok, B. L., Yingprayoon, J., Singh, C. K. S., Borhan, M. T., & Tho, S. W. (2020). The effect of 5E inquiry learning model on the science achievement in the learning of "Magnet" among year 3 students. *Jurnal Pendidikan IPA Indonesia*, 9(1), 1–10. https://doi.org/10.15294/jpii.v9i1.21330

Pahrudin, A., Syafril, S., Zahro, R., Handoko, A., Yaumas, N. E., & Iksan, Z. H. (2019). Development of Islamic Value-based Picture in Biology Learning with the ISI-ARE Model. *Tadris: Jurnal Keguruan Dan Ilmu Tarbiyah*, 4(2), 237–246. https://doi.org/10.24042/TADRIS.V4I2.4668

Palupi, B. S., Subiyantoro, S., Rukayah, & Triyanto. (2020). The effectiveness of Guided Inquiry Learning (GIL) and Problem-Based Learning (PBL) for explanatory writing skill. *International Journal of Instruction*, *13*(1), 713–730. https://doi.org/10.29333/iji.2020.13146a

Panasan, M., & Nuangchalerm, P. (2010). Learning Outcomes of Project-Based and Inquiry-Based Learning Activities. *Journal of Social Sciences*, 6(2), 252–255.

Peterson, M., & Venema, D. (2021). *Biology, Religion, and Philosophy: An Introduction*. Cambridge University Press. https://doi.org/10.1017/9781139381765.003

Purwati, N., Zubaidah, S., Corebima, A. D., & Mahanal, S. (2018). Increasing Islamic

Junior High School students learning outcomes through integration of science learning and Islamic values. *International Journal of Instruction*, 11(4), 841–854. https://doi.org/10.12973/iji.2018.11453a

Retnowati, R., Awaludin, M. T., & Heryawati, E. R. (2020). Developing an integrated biology module for students' environmental attitude instruments. *JPBI*, *6*(2), 327–334. https://doi.org/10.22219/JPBI.V6I2.11163

Rohimin, R., Mukti, W. A. H., Oktaviani, S., Erfan, M., & Ratu, T. (2020). Comparison of Learning Outcomes Inquiry Learning Model With Cooperative Learning Model Type Number Head Together (NHT) Learning In Natural Sciences Class V In Public Elementary School 66 Bengkulu City. *IJIS Edu : Indonesian Journal of Integrated Science Education*, 2(2), 114–118. https://ejournal.iainbengkulu.ac.id/index.php/ijisedu/article/view/3260

Ryan, T. G., & St-Laurent, M. (2016). Inquiry-Based Learning: Observations and Outcomes. *Journal of Elementary Education*, 26(1), 1–22.

Sa'adah, N., Effendi, & Ibnu, S. (2017). The Influence of Students' Inquiry Learning and Spatial Ability Toward Molecular Shape Topic. *Jurnal Pendidikan Sains*, 5(2), 64–71. http://journal.um.ac.id/index.php/jps/

Saad, S., Carter, G. W., Rothenberg, M., & Israelson, E. (1999). *Testing and Assessment: An Employer's Guide to Good Practices* (Issue 6). Employment and Training Administration. https://files.eric.ed.gov/fulltext/ED447310.pdf

Sanders, M. G. (2006). *Building school-community partnerships: Collaboration for student success* (Issue January 2006). Corwin Press. https://doi.org/10.4135/9781452224831

Saunders-Stewart, K. S., Gyles, P. D. T., & Shore, B. M. (2012). Student Outcomes in Inquiry Instruction: A Literature-Derived Inventory. *Journal of Advanced Academics*, 23(1), 5–31. https://doi.org/10.1177/1932202X11429860

Savarirajan, D., & Fong, S. (2019). Bridging Bible and Biology: The Impact of Faith Integration on The Spiritual Growth Of Students In Christian Higher Education. *Journal of Instructional Researc*, 8(1), 5–16.

Schleicher, A. (2019). *PISA 2018: Insights and Interpretations*. OECD Publishing. https://www.oecd.org/pisa/PISA 2018 Insights and Interpretations FINAL PDF.pdf

Sever, D., & Güven, M. (2014). Effect of Inquiry-based Learning Approach on Student Resistance in a Science and Technology Course \*. *Educational Sciences: Theory & Practice* •, *14*(4), 1601–1605. https://doi.org/10.12738/estp.2014.4.1919

Shanmugavelu, G., Parasuraman, B., Ariffin, K., Kannan, B., & Vadivelu, M. (2020). Inquiry Method in the Teaching and Learning Process. *Shanlax International Journal of Education*, 8(3), 6–9. https://doi.org/10.34293/education.v8i3.2396

Singh, C. K. S., Singh, T. S. M., Ja'afar, H., Tek, O. E., Kaur, H., Mostafa, N. A., &

Yunus, M. M. (2020). Teaching strategies to develop higher order thinking skills in english literature. *International Journal of Innovation, Creativity and Change*, *11*(8), 211–231.

Sokip, Akhyak, Soim, Tanzeh, A., & Kojin. (2019). Character Building in Islamic Society: A Case Study of Muslim Families in Tulungagung, East Java, Indonesia. *Journal of Social Studies Education Research*, *10*(2), 224–242.

Spronken-Smith, R. (2008). Experiencing the Process of Knowledge Creation: The Nature and Use of Inquiry-Based Learning in Higher Education. *Journal of Geography in Higher Education*, 2, 183–201.

Tiwow, M. F. (2019). Inquiry Learning Model to Improve Student Learning Outcomes. *Advances in Social Science, Education and Humanities Research*, *382*, 225–228.

Tornee, N., Bunterm, T., & Tang, K. N. (2017). The impacts of inquiry-based learning model on teaching science subject: A case study in Thailand. *Journal of Educational Technology*, 2017(December Special Issue INTE), 395–402.

Utami, S., & Sundari, S. (2019). Inquiry-Based Learning for Improving Student Learning Outcomes: Literature Review. *Jurnal Penelitian & Pengembangan Pendidikan Fisika*, 5(1), 49–62. https://doi.org/10.21009/1.05106

Warmbrod, J. R. (2014). Reporting and Interpreting Scores Derived from Likert-type Scales. *Journal of Agricultural Education*, 55(5), 30–47. https://doi.org/10.5032/jae.2014.05030

Willems, P. P., & Gonzalez-DeHass, A. R. (2012). School-Community Partnerships: Using Authentic Contexts to Academically Motivate Students. *School Community Journal*, 22(2), 9–30.

Yen, T. S., & Halili, S. H. (2015). Effective Teaching of Higher-Order Thinking (HOT) in Education. *The Online Journal of Distance Education and E-Learning*, *3*(2), 41–47. www.tojdel.net

Zaini, M., Kaspul, M., & Arsyad, M. (2017). *The Implementation of Inquiry Based Learning toward Students' Learning Outcomes and Critical Thinking Skills*. 38–42. https://doi.org/10.2991/SEADRIC-17.2017.9

Zuckerman, M., Silberman, J., & Hall, J. A. (2013). The Relation Between Intelligence and Religiosity: A Meta-Analysis and Some Proposed Explanations. *Personality and Social Psychology Review*, *17*(4), 325–354. https://doi.org/10.1177/1088868313497266

Zulfikar, T. (2018). The Making of Indonesian Education: An overview on Empowering Indonesian Teachers. *Journal of Indonesian Social Sciences and Humanities*, 2, 13–39. https://doi.org/10.14203/jissh.v2i0.19