

## Innovative learning methods of Islamic education subject in Indonesia: a meta-analysis

Anuraga Jayanegara<sup>1,2,3</sup>, Asrori Mukhtarom<sup>1</sup>, Ismail Marzuki<sup>1</sup>

<sup>1</sup>Postgraduate Program of Islamic Education, Universitas Muhammadiyah Tangerang, Tangerang, Indonesia

<sup>2</sup>Postgraduate Program of Islamic Education, Universitas Islam Jakarta, East Jakarta, Indonesia

<sup>3</sup>Department of Nutrition and Feed Technology, Faculty of Animal Science, IPB University, Bogor, Indonesia

### Article Info

#### Article history:

Received Dec 23, 2022

Revised Aug 9, 2023

Accepted Aug 20, 2023

#### Keywords:

Achievement

Activity

Islamic education

Learning method

Motivation

### ABSTRACT

This study aimed to evaluate the effects of innovative learning methods in the Islamic education (ISE) subject on learning motivation, learning activity, and learning achievement of students in the elementary and secondary schools in Indonesia. This study employed the meta-analysis method which is among the quantitative research approach. There were 47 literatures that eligible to be included in the database. Results revealed that, for the learning motivation variable, effect size value in the form of odds ratio was significantly higher than 1.0 (average 3.008 [2.020-4.480];  $P < 0.001$ ). For the learning activity variable, effect size value was significantly higher than 1.0 (average 2.905 [2.113-3.994];  $P < 0.001$ ). For the learning achievement variable, effect size value was significantly higher than 1.0 (average 4.941 [4.136-5.903];  $P < 0.001$ ). These indicated that innovative learning methods were able to elevate learning motivation, activity and achievement. There were no significant differences among the categories within most of the sub-groups, except for the sub-group of cycle, in which cycle 2 showed higher learning achievement than that of cycle 1 ( $P < 0.05$ ). It can be concluded that innovative learning methods are able to elevate learning motivation, learning activity, and learning achievement of students at elementary and secondary schools to study the Islamic education subject. Future work should address the interaction between each particular innovative learning method and the ISE specific topic.

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### Corresponding Author:

Anuraga Jayanegara

Department of Nutrition and Feed Technology, Faculty of Animal Science, IPB University

St. Agatis Kampus IPB Dramaga Bogor-16680, Indonesia

Email: anuraga.jayanegara@gmail.com

## 1. INTRODUCTION

In Indonesia, Islamic education (ISE) is a subject that must be taught to all citizens who are Muslim, not only for those who specifically study religion-related disciplines, but also for those who study other disciplines such as natural sciences, social sciences, and engineering. This is applied to students from various levels, i.e., elementary school (*Sekolah Dasar/SD*), secondary school (*Sekolah Menengah Pertama/SMP*), high school (*Sekolah Menengah Atas/SMA*), and undergraduate students in the university. Such mandatory of ISE teaching is derived from the national constitution of Republic of Indonesia no. 20, 2003, regarding the national education system. It is stated that national education is based on Pancasila and the 1945 constitution of the Republic of Indonesia, which is rooted in religious values, Indonesian national culture and responsive to the changing times. Furthermore, the Indonesian national education aims to develop the potency of citizen to become human beings who believe to the God Almighty, have noble characters, healthy, knowledgeable,

capable, creative, independent, democratic and responsible. Teaching of ISE itself is aimed at preparing students to recognize, understand, appreciate, believe, have noble characters, practice Islamic teachings from the sources of the Qur'an and Hadith, through guidance, teaching, training, and experiential.

The learning method of ISE at various educational institutions generally employs the lecturing method [1]. In the lecturing method, ISE teachers deliver and explain learning materials orally to students in the classroom. The main activity of students in this method is listening to the learning material delivered by the teachers carefully and taking notes on the important points of the material [2]. The lecturing method has a number of advantages, i.e., easier to organize classes, suitable for a large number of students, relatively easy to prepare teaching and learning activities, and suitable to deliver a difficult topic. Due to these reasons, it is not surprising that the lecturing method is typically used by the ISE teachers in the classroom. However, this method also has a number of disadvantages, i.e., teacher-centered learning, not easy to assess the extent to which students understand the lecture, possibility of misinterpretation by students, and tends to make students less creative [3]. Such weaknesses of the conventional learning method, i.e., the lecturing method need to be overcome or at least reduced in order to enhance students' understanding.

The effectiveness of ISE learning has to be continuously improved in order to achieve learning objectives, and this depends on, among others, the learning method. Since the conventional (lecturing) method has a number of limitations as described, innovation of ISE learning methods is therefore required. A number of innovative learning methods that may serve as alternatives to the lecturing method include question and answer methods, discussions, demonstrations, experiments, recitations, group work, role playing, field trips, drills, discovery, team teaching systems, problem solving, projects, moral reasoning, mind maps, and quantum methods [4]. This study aimed to evaluate the effects of innovative learning methods on learning motivation, learning activity and learning achievement of students in the ISE subject by employing the meta-analysis approach.

## 2. RESEARCH METHOD

This study used the meta-analysis method which is one of the research methods with a quantitative approach [5], [6]. This method has been repeatedly used in the field of educational research and evaluation [7], [8]. The stages of the study consisted of: i) problem formulation; ii) literature search and selection; iii) database development; iv) determination of effect size method and it is integration; and v) publication bias analysis.

Formulation of the research problem was carried out using the population, intervention, comparison, outcome (PICO) model [5]. Population was students in elementary, secondary and high school education in Indonesia who obtain ISE subject. Intervention was the innovative learning methods. Comparison was the conventional learning method (the lecturing method). Outcome was learning motivation, learning activity and learning achievement.

Literature search was carried out by using the Google Scholar and Scopus platforms using the keywords "learning method", "Islamic education", "learning motivation", "learning activity" and/or "learning achievement". Articles obtained through the search process were then selected based on the following inclusion criteria: i) the research was conducted on students at elementary, secondary and high school education levels in Indonesia, ii) the article directly compared between the innovative learning methods and the conventional learning method, iii) the article reported dependent variables in the form of learning motivation, learning activity, and/or learning achievement, and iv) the subject was specific on ISE.

The selected articles were subsequently integrated into a database. The data were the number of samples or respondents from each study and the percentage values, both from the conventional/lecturing method and the interactive learning method in pairs. The response variables were learning motivation, learning activity and learning achievement. Moderator variables specified in the database were level of study (elementary, secondary and high school), region (Java, Kalimantan, Nusa Tenggara, Sulawesi, Sumatera), school category (state, private), category of innovative learning methods (direct, indirect, interactive, experiential, independent), ISE topic (Al-Quran, *aqidah*/belief, *ibadah*/worship, *akhlak*/moral, history, general), and learning cycle (first, second). Odds ratio (OR) was employed as the effect size for integrating data from different studies [9] with the (1) to (4).

$$\text{Odds Ratio} = e^{\text{Log Odds Ratio}} \quad (1)$$

$$\text{Log Odds Ratio} = \text{Log} \left( \frac{A \times D}{B \times C} \right) \quad (2)$$

$$\text{Log Odds Variance} = \frac{1}{A} + \frac{1}{B} + \frac{1}{C} + \frac{1}{D} \quad (3)$$

$$\text{Log Odds SE} = \sqrt{\text{Log Odds Variance}} \quad (4)$$

Where, A is proportion in the innovative learning method×number of samples; B is number of sample-A; C is proportion in the conventional learning method×number of sample; and D is number of sample-C. After each study had calculated the effect size in the form of OR, then the cumulative effect size was calculated through the integration process. The integration of the effect size was carried out using a random effects model with the DerSimonian Laird algorithm [9]. The results of the synthesis were displayed in the form of forest plots [10]. Sub-group analysis was conducted based on the pre-defined moderator variables, i.e., level of study, region, school category, category of innovative learning methods, ISE topic, and learning cycle. Publication bias was assessed by using the funnel plot, Egger and Begg tests [11]. An analysis of publication bias is required when conducting a meta-analysis study since its presence may affect the validity and generalization of the results obtained.

### 3. RESULTS AND DISCUSSION

There were 47 literatures that met the inclusion criteria. Therefore, it was used in the development of the meta-database as shown in Table 1. The results indicate that the innovative learning methods used to enhance learning motivation, learning activity and learning achievement of ISE subject varied widely.

Table 1. Literatures used in the meta-database

No.	Literature	Innovative learning Method	Variable		
			LM	LAct	LAch
1	[12]	Peer tutor	–	–	√
2	[13]	Team teaching	–	–	√
3	[14]	Discovery learning	–	–	√
4	[15]	Probing prompting	–	√	–
5	[16]	Learning cycle 5E	–	√	√
6	[17]	Group investigation	–	–	√
7	[18]	Contextual teaching and learning	√	–	–
8	[19]	Guided note taking and minutes paper	–	–	√
9	[20]	Make a match	–	√	√
10	[21]	Team quiz	–	–	√
11	[22]	Card sort	–	√	√
12	[23]	Call on the next speaker	–	–	√
13	[24]	Discovery inquiry	–	–	√
14	[25]	Make a match	–	–	√
15	[26]	Make a match	√	–	–
16	[27]	Quantum teaching	–	–	√
17	[28]	Market place activities, Expert group, Group investigation	–	–	√
18	[29]	Recitation	√	–	–
19	[30]	Survey, question, read, recite, review (SQ3R)	–	–	√
20	[31]	Mind mapping	–	√	–
21	[32]	Blended learning	√	–	–
22	[33]	Cooperative script	–	√	√
23	[34]	Practice	–	√	√
24	[35]	Delicap	–	–	√
25	[36]	Teams games tournament	–	√	√
26	[37]	Jigsaw	–	–	√
27	[38]	Discovery learning	–	–	√
28	[39]	The power of two	–	√	√
29	[40]	Assignment	–	–	√
30	[41]	Drill and practice	–	√	√
31	[42]	Card sort	–	–	√
32	[43]	Group discussion	–	–	√
33	[44]	Contextual teaching and learning	–	√	√
34	[45]	Problem based learning	√	–	–
35	[46]	Learning cell	–	√	√
36	[47]	Demonstration	–	–	√
37	[48]	Snowball throwing	–	–	√
38	[49]	Lecturing variation	–	–	√
39	[50]	Card sort	–	–	√
40	[51]	Demonstration	–	–	√
41	[52]	Practice	√	–	√
42	[53]	Demonstration	–	–	√
43	[54]	Preview, question, read, reflect, recite, and review (PQ4R)	–	–	√
44	[55]	Quick on the draw	–	–	√
45	[56]	Giving question and getting answer	–	–	√
46	[57]	Questions students have	√	–	–
47	[58]	Problem based learning	√	–	–

Note: LM=learning motivation; LAct=learning activity; LAch=learning achievement.

These variations of innovative learning methods may be classified into five categories: i) direct learning methods; ii) indirect learning methods; iii) interactive learning methods; iv) experiential learning methods; and v) independent learning methods. The classification results are shown in Table 2. Meta-analysis results (in the form of forest plots) regarding the effects of innovative learning methods on learning motivation, learning activity and learning achievement of students to study ISE subject are presented in Figures 1, 2 and 3, respectively.

Table 2. Classification of innovative learning methods used in the meta-analysis

No.	Classification	Innovative learning method
1	Direct	Team teaching, probing prompting, contextual teaching and learning, guided note taking and minutes paper, quantum teaching, blended learning, demonstration, lecturing variation, giving question and getting answer.
2	Indirect	Discovery learning/inquiry, learning cycle 5E, the power of two, problem-based learning.
3	Interactive	Peer tutor, group investigation, make a match, team quiz, card sort, call on the next speaker, market place activities, expert group, mind mapping, cooperative script, teams games tournament, jigsaw, group discussion, learning cell, snowball throwing, quick on the draw, questions students have.
4	Experiential	Practice, delicap, drill and practice.
5	Independent	Recitation, SQ3R, assignment, PQ4R.

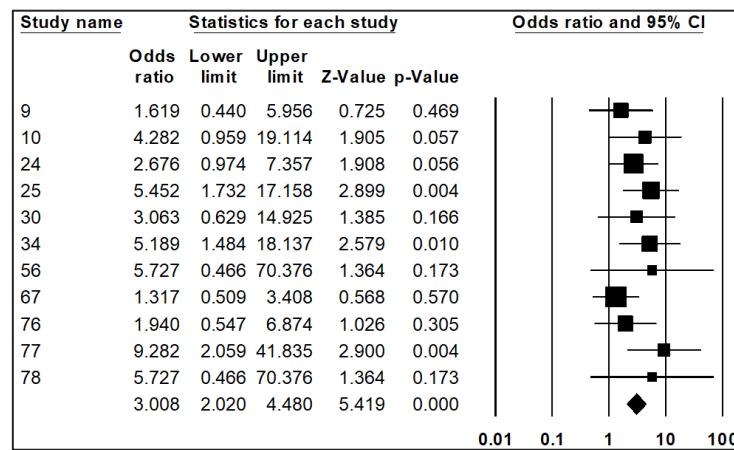


Figure 1. Forest plot of innovative learning method effect on learning motivation of students to study ISE subject

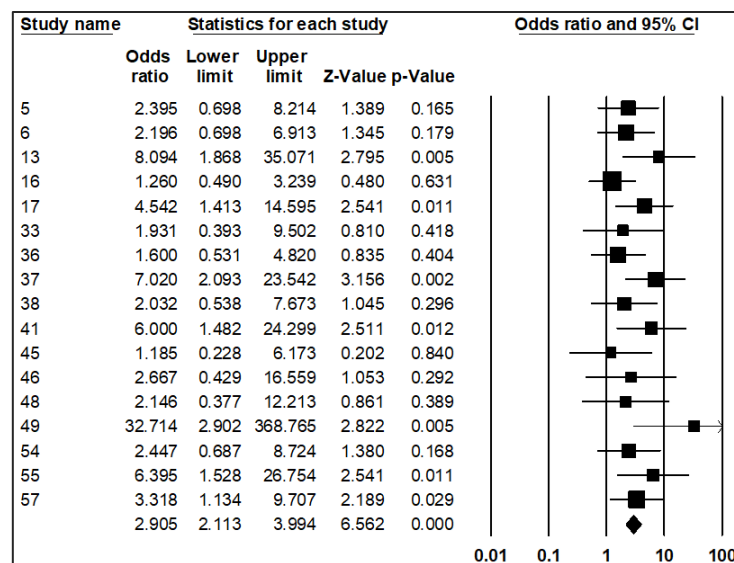


Figure 2. Forest plot of innovative learning method effect on learning activity of students to study ISE subject

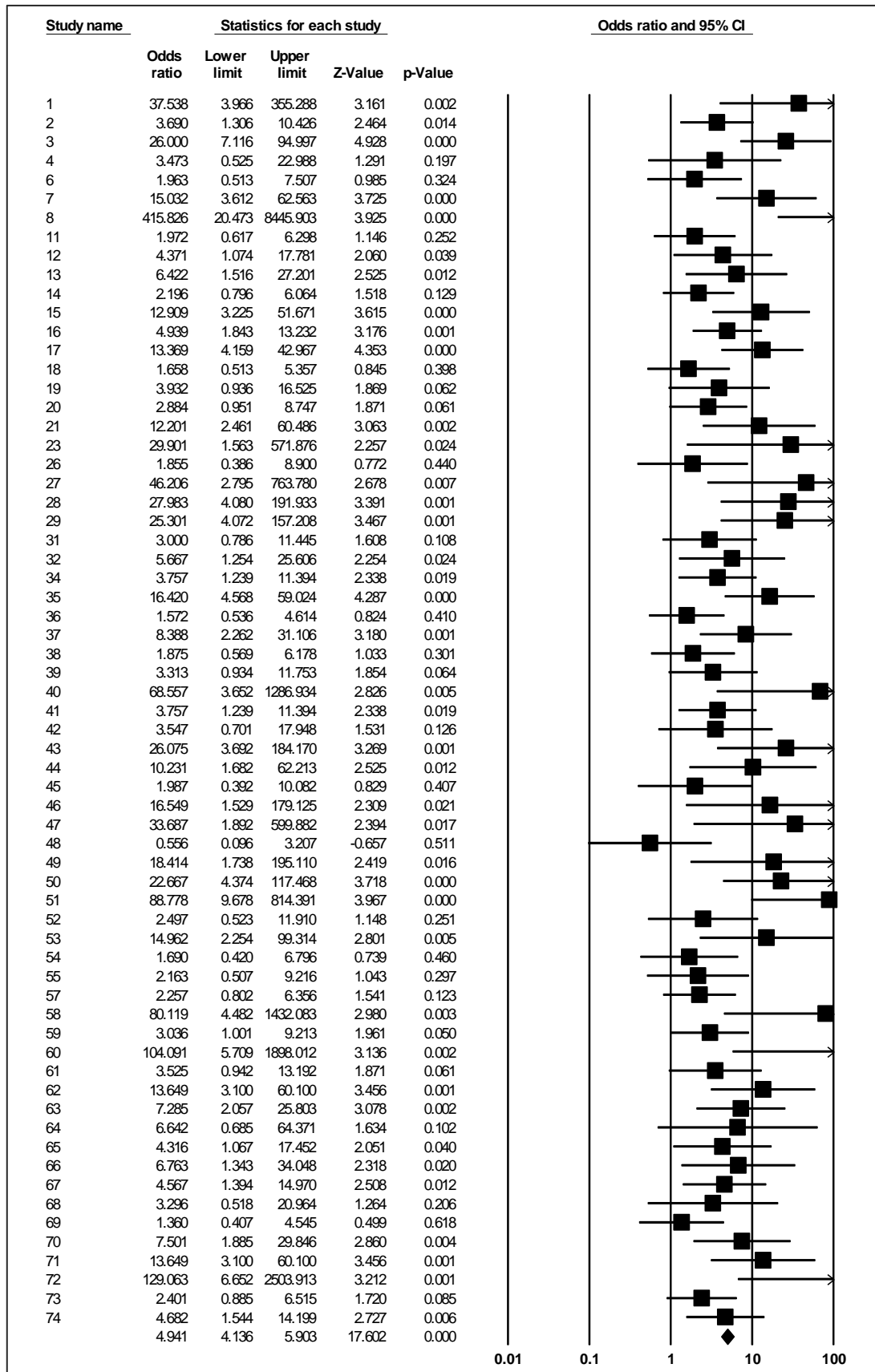


Figure 3. Forest plot of innovative learning method effect on learning achievement of students to study ISE subject

With regard to the learning motivation variable, the effect size value in the form of OR was significantly higher than 1.0 (mean 3.008; lower limit 2.020; upper limit 4.480;  $P < 0.001$ ). This indicated that innovative learning methods increased students' learning motivation, i.e., from 58.6% to 81.2% (an increase of 38.7%). For the learning activity variable, the OR value was also significantly higher than 1.0 (mean 2.905; lower limit 2.113; upper limit 3.994;  $P < 0.001$ ). This indicated that innovative learning methods elevated the learning activity of students, i.e., from 50.1% to 74.6% (an increase of 48.9%). Regarding the learning achievement variable, the OR value was significantly higher than 1.0 as well (mean 4.941; lower limit 4.136; upper limit 5.903;  $P < 0.001$ ), indicating the enhancement of students' achievement by the innovative learning methods, i.e., from 44.7% to 80.9% (an increase of 80.9%).

The sub-group analysis was carried out on the learning achievement variable as shown in Table 3. The variables of learning motivation and learning activity could not be analyzed for their sub-groups due to the few amounts of data available. Based on Table 3, in the school level sub-group, innovative learning methods improved students' learning achievement at various levels, both elementary, secondary and high school ( $P < 0.001$ ). In the area sub-group where the school is located, innovative learning methods enhanced students' learning achievement in all areas, i.e., Java, Kalimantan, Nusa Tenggara, Sulawesi and Sumatera ( $P < 0.001$ ). In the school category sub-group, innovative learning methods elevated students' learning achievement in both public and private schools ( $P < 0.001$ ). In the learning method category, the innovative learning methods in the forms of direct, indirect, interactive, experiential and independent methods increased students' learning achievement ( $P < 0.001$ ). In the ISE topic sub-group, innovative learning methods significantly improved students' learning achievement on various ISE topics, i.e., Al-Quran, *aqidah*, *ibadah*, *akhlak*, history and general topics ( $P < 0.001$ ). In the cycle sub-group, innovative learning methods in cycle 1 and cycle 2 increased students' learning achievement ( $P < 0.001$ ). There were no significant differences among categories in almost all sub-groups, except for the cycle sub-group. Cycle 2 showed a higher learning achievement than cycle 1 ( $P < 0.05$ ).

**Table 3. Sub-group analysis of innovative learning method effect on learning achievement**

Sub-group	Number of study	Effect size	Lower limit	Upper limit	P-value	
School level	Elementary	27	5.257	3.915	7.059	<0.001
	Secondary	26	4.703	3.604	6.136	<0.001
	High	14	5.466	3.707	8.060	<0.001
Area	Java	29	5.340	4.075	6.999	<0.001
	Kalimantan	12	4.927	3.133	7.747	<0.001
	Nusa Tenggara	4	4.367	2.195	8.686	<0.001
	Sulawesi	4	4.136	2.120	8.067	<0.001
	Sumatera	18	5.100	3.678	7.072	<0.001
School category	Public	53	4.663	3.831	5.676	<0.001
	Private	14	6.957	4.682	10.34	<0.001
Method	Direct	18	4.463	3.287	6.060	<0.001
	Indirect	8	4.447	2.502	7.906	<0.001
	Interactive	30	6.587	5.021	8.643	<0.001
	Experiential	6	3.198	1.732	5.907	<0.001
	Independent	5	3.732	1.938	7.186	<0.001
ISE topic	Al-Quran	8	8.557	5.021	14.58	<0.001
	<i>Aqidah</i>	12	6.449	4.106	10.13	<0.001
	<i>Ibadah</i>	12	3.896	2.614	5.808	<0.001
	<i>Akhlak</i>	13	5.192	3.432	7.854	<0.001
	History	8	5.134	3.202	8.234	<0.001
Cycle	General	14	4.002	2.760	5.808	<0.001
	1	41	3.534 <sup>a</sup>	2.861	4.365	<0.001
	2	24	11.18 <sup>b</sup>	8.040	15.55	<0.001

Note: Different superscripts within the same sub-group are significantly different at  $P < 0.05$ .

Analysis of publication bias was performed visually using a funnel plot and statistically using the Begg's and Egger's tests. The funnel plots for learning motivation and learning activity were symmetrical as shown in Figures 4 and 5, respectively, while that for learning achievement was asymmetric as shown in Figure 6. This was reinforced by the results of Begg's and Egger's tests as shown in Table 4, where both were not significant for the variables of learning motivation and learning activity (indicating no publication bias), but significant ( $P < 0.001$ ) for the learning achievement variable (indicating there was publication bias).

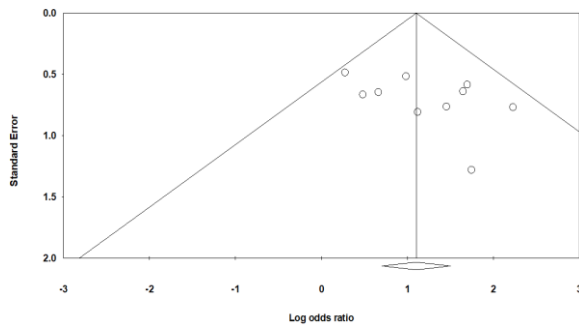


Figure 4. Funnel plot for learning motivation variable

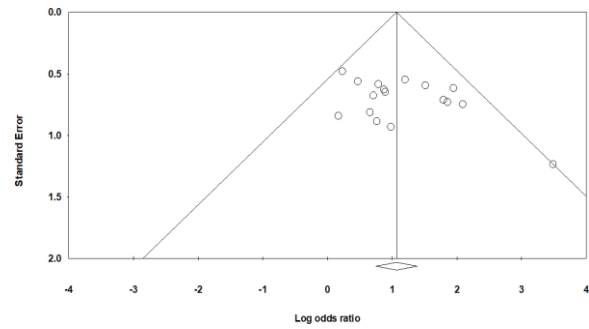


Figure 5. Funnel plot for learning activity variable

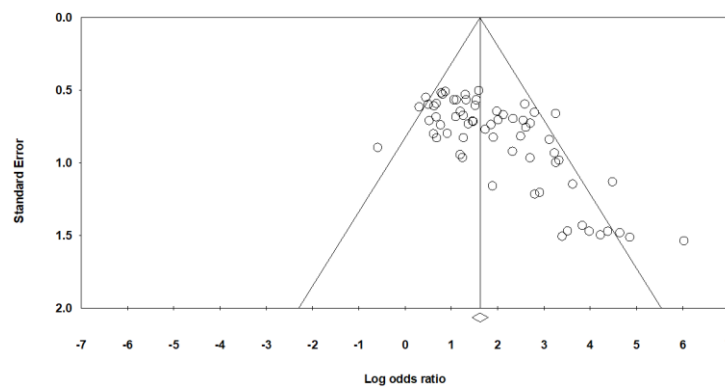


Figure 6. Funnel plot for learning achievement variable

Table 4. Begg’s dan Egger’s test results for learning motivation, activity and achievement variables

Variable	Begg’s test (P-value)	Egger’s test (P-value)
Learning motivation	0.276	0.123
Learning activity	0.161	0.091
Learning achievement	<0.001	<0.001

Increasing students’ learning motivation through innovative learning methods is in accordance with the theory that teaching methods are one of the factors that may influence learning motivation [59]. Other factors that also affect learning motivation are the goals or targets to be achieved, the abilities of students, physical and psychological conditions, and environmental conditions such as family environment, place of residence, friendships, and society [59]. The learning method is a stimulus that originates from external and therefore it is classified as an extrinsic motivation. Ideally, learning motivation that arises is an intrinsic motivation originating from the students themselves so that it is more stable and does not require external stimulation [60]. However, extrinsic motivation is often needed to subsequently generate intrinsic motivation.

There are a number of indicators of students’ learning motivation, i.e., i) desire to success; ii) encouragement and need for learning; iii) hopes and aspirations of the future; iv) appreciation in learning; v) interesting activities in learning; and vi) conducive learning environment [61]. In this study, innovative learning methods that increased learning motivation were the make a match method, blended learning, and questions students have. The make a match learning method is a learning method in which students look for partners through cards; students receive a card containing a question or answer, then they look for a suitable partner according to the card they hold [62]. The increased learning motivation of students in studying ISE with the make a match method is because this method involves all students to be active in the learning process and fun [26]. The blended learning method is a learning model that combines face-to-face learning method with computer-assisted learning method or similar technology (in the form of text, audio, video and/or multimedia), both offline and online to form an integrated learning approach [63]. The increase of learning motivation with the blended learning method is due to students’ interest in using computer-based

learning technology, especially students who are belong to Z generation that sensitive to information and communication technology [64].

With regard to the questions students have learning method, this method is one of the active learning methods which is included in the collaborative learning category (learning by working together) which aims to train the ability to work together, listen to the opinions of others, improve memory of the material learned, train a sense of care and willingness to share, increase respect for others, train emotional intelligence, hone interpersonal intelligence, increase motivation and learning atmosphere, and increase learning speed and results [65]. The increased learning motivation of students in studying ISE through the questions students have method is due to the active learning and fun. Active and interactive learning models have been recommended for application to various subjects since they are allegedly more effective than conventional learning models which tend to be passive [66].

Innovative learning methods increased students' learning activity in studying the ISE subject. This indicates that innovative learning methods drive students to be more enthusiastic and passionate about learning, thus increasing their activeness in the learning process. This condition is different if the learning method provided is in the form of conventional method, i.e., the lecturing method. In the lecturing method, ISE teachers convey and explain learning materials orally to students in class. The main activity of students in this method is listening to the learning material delivered by the teacher carefully and noting the important points of the material [2]. Thus, students are relatively more passive so that their learning activity is lower.

Learning activity of students has a number of indicators, i.e., i) participating in carrying out learning assignments; ii) being involved in problem solving; iii) asking other students or the teacher if they do not understand the problems; iv) trying to find various information needed for problem solving; v) carrying out group discussions according to the teacher's instructions; vi) assessing their own abilities and the results they obtain; vii) training themselves in solving problems; and viii) using opportunities or apply what they have obtained in completing the tasks or problems [67]. In line with this, Naziah *et al.* [68] described that indicators of students' learning activity are: i) students can carry out learning tasks; ii) students are active in discussions; iii) students are active in asking questions; iv) involved in problem solving; v) actively seek information to solve a problem; and vi) conduct an evaluation of the results that have been obtained during learning. When examining at these indicators, there are a number of indicators that can only be achieved through innovative learning methods and cannot be achieved by the lecturing method.

Increasing the learning activity through innovative learning methods is also related to the enhancement of learning motivation. Empirically, a number of studies indicate a close relationship between learning motivation and learning activity. For instance, Gunawan [69] demonstrated that learning motivation had a positive and significant effect on learning activity. Furthermore, Tegeh and Pratiwi [70] also reported a positive correlation between learning motivation and learning activity of elementary school students in learning science subjects, and these two variables together positively influenced students' learning achievement with a coefficient of determination of 0.721.

The increase in students' learning achievement when implementing innovative learning methods is inseparable from the increased learning motivation and learning activity. Students who possess high learning motivation will tend to be more active in participating in the learning process, and as a result of increasing these two variables, their learning achievement will also increase. There are two factors that affect the learning achievement, namely the internal factors or factors from inside and external factors or factors from outside. Internal factors that influence learning achievement are physiological aspects (body fitness and conditions) and psychological aspects (intelligence, attitudes, talents, interests, motivation and personality). External factors that affect learning achievement include: i) social environment, including friends, teachers, family and society; and ii) non-social environment, including the condition of houses, schools, equipment, and nature (weather) [67]. Even though innovative learning methods are among the external factors that influence learning achievement, they may induce the psychological aspects of students in learning, especially interest and motivation to learn.

#### 4. CONCLUSION

Innovative learning methods are able to enhance learning motivation, learning activity and learning achievement of school students to study the Islamic Education subject in Indonesia as compared to that of the conventional learning method (the lecturing method). The increase through innovative learning methods is 38.7% for learning motivation, 48.9% for learning activity, and 80.9% for learning achievement. Innovative learning methods elevate the learning achievement of students at various levels, i.e., elementary, secondary and high schools, and these apply to both public and private schools. In the learning method category, innovative learning methods in the forms of direct, indirect, interactive, experiential and independent methods can improve students' learning achievement. In the ISE topic sub-group, innovative learning methods increase students' learning achievement on various topics, i.e., the topics of Al-Qur'an, *aqidah*,



*ibadah, akhlak, history and general. In the cycle sub-group, innovative learning methods both in cycle 1 and cycle 2 improve learning achievement of students, and cycle 2 demonstrates better result in comparison to cycle 1. Future work should address the interaction between each particular innovative learning method and the ISE specific topic.*

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## BIOGRAPHIES OF AUTHORS






**Anuraga Jayanegara**    is a lecturer at Faculty of Animal Science, IPB University. He obtained his bachelor degree from IPB University Indonesia (2003), master degree from University of Hohenheim Germany (2008), and doctoral degree from ETH Zurich Switzerland (2011), all of them were in the major of Animal Nutrition and Feed Science. He also completed another master program in Islamic Education from Universitas Muhammadiyah Tangerang in 2022. Currently, he is undertaking his doctoral study in Islamic Education at Universitas Islam Jakarta. He can be contacted at email: [anuraga.jayanegara@gmail.com](mailto:anuraga.jayanegara@gmail.com).



**Asrori Mukhtarom**    is a lecturer at Universitas Muhammadiyah Tangerang (UMT). He completed his doctoral program from Institut Perguruan Tinggi Ilmu Al-Qur'an (PTIQ). His research interests are within the area of Islamic education and Qur'anic based education. He is presently the Head of Islamic Education Master Program at UMT. He can be contacted at email: [asrorimukhtarom84@gmail.com](mailto:asrorimukhtarom84@gmail.com).



**Ismail Marzuki**    is a lecturer at Universitas Muhammadiyah Tangerang (UMT). He obtained his doctoral degree from Universitas Negeri Jakarta. His research interests are within the area of educational science and technology, educational evaluation, and learning model and media. He is currently the Director of Postgraduate Program at UMT. He can be contacted at email: [ismailmz@yahoo.com](mailto:ismailmz@yahoo.com).