

The Effect of Cooperative Learning on Learning Motivation: A Meta-Analysis

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Abstract. Cooperative learning can increase students' learning motivation. Numerous studies have examined the effect of these models on students' motivation to learn. This meta-analysis study was designed to generalize the impact on science learning motivation in elementary, junior high, and senior high school students. This study aims to examine the effect of cooperative learning models on students' learning motivation at the elementary, junior high, and high school levels, as well as the difference in mean motivation scores between the control and experimental groups. This study was conducted using meta-analysis techniques. The data used in this study came from 13 previous studies. The data were then analyzed using descriptive and inferential statistics. The research findings revealed that the effect of the cooperative learning model on learning motivation at the junior high school level was greater than that at other educational levels. Additionally, there was no discernible difference in the mean motivation score between the experimental group using the cooperative learning model and the control group using the conventional learning model.

Keywords: cooperative learning; learning motivation; learning model; meta-analysis

Introduction

Learning, which includes reading, writing, drawing, storytelling, and other complicated activities, is one of the multifaceted processes used to acquire knowledge. According to Skinner (Feist & Feist, 2008; Hergenhahn & Olson, 2015), behaviors can be learned well. The conditions that make the behavior appear can be predicted, controlled, and conditioned. Adliyani (2015) discusses in more detail how behavior develops as a result of a variety of factors, such as the reciprocal relationship between stimulus and reaction.

Learning as a behavior means that there must be an incentive to develop learning behavior. Cooperative learning is a form of learning that can provide a stimulus for students to engage in learning behaviors. Hanafy (2017) argued that in the study, the educators do the efforts in order to create the process of acquiring knowledge, proficiency assignment, forming attitudes and trust in learners in order to facilitate the students to learn well. Cooperative learning was suggested as a learning strategy that can increase the motivation of young people (Fernández-Espinola et al., 2020). Cooperative learning is described as "one large step beyond just learning next to one another to

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learning with, by, and for each other" (Alcalá et al., 2019; Metzler, 2005). Johnson in Rachmah (2017) believes that cooperative learning method helps to acquire critical thinking skills. This can happen because the students with cooperative learning acquires critical thinking skills in which the students must explain, discuss a variety of perspectives, and have a broader understanding of the materials they learn.

Gambari et al. (2015) explains that cooperative learning allows students to be actively involved in learning, to communicate their ideas with each other, to brainstorm, provide immediate feedback, and to work together to solve problems. That statement indicates that cooperative learning can help drive students to engage in learning actively, communicate one another, exchange thoughts, re-hold feedback and have issues together.

Wedyawati and Lisa (2019) added that cooperative learning is a study focused on the use of small groups of students, working together in order to maximize the learning conditions so that they can achieve learning objectives. The steps of cooperative learning based on Ibrahim, et al. (Al-Tabany, 2017) are: (1) conveying the purpose of the lesson and motivating the students; (2) presenting the information; (3) organizing the students into cooperative groups; (4) guiding groups of work and study; (5) evaluating learning outcomes; and (6) giving rewards.

Based on Himawan et al. (2018), learning model is a plan or pattern used as a guideline for planning learning activities in the classroom. The learning model is a common pattern of learning behavior to achieve the intended competency or objectives that is made based on the belief that cooperative learning is among the learning models that can help improve student motivation.

According to Woolfolk (2009), motivation is an internal state that arouses, directs, and sustains behavior. Cleopatra (2015) stated that motivation is a factor that stimulates the occurrence of encouragement then responding and behaving. Suprihatin (2015) argues that how strong an individual's motivation would determine the quality of the behavior appeared, whether in the learning context, working or in other context of our lives. Hancock in Tran (2019) stated that motivation is considered as an indispensable element that offers guidance, inspires, and maintains constructive attitude towards a shared goal. The intent of its statement is that motivation is an indispensable element that offers guidance, inspiration, and attitude maintenance constructively for common purposes.

According to Daud (2012), learning motivation is the overall driving force of the students who can actively participate in learning activities, ensuring the continuity of the learning activities and giving direction to learning activities in order to achieve the goal. Emda (2018) stated that motivation highly affects the success of the students' learning outcomes. The success of learning will be achieved when there are both willingness and encouragement to learn. Razak (2016) added that motivation definitely supports in mastering the materials and in consequence, the students' learning outcomes also increase which means that the motivation is very crucial for the students to master the material and cause increased outcome. Ahmadi in Mulyaningsih (2014) also argued that motivation can determine the quality of the goal reached. The higher the motivation, the greater the success of learning acquired. The one who has great motivation will be actively striving, persistent, not easy to yield and he/ she

will actively indulge in learning resources to increase the achievements in solving problems.

Sardiman in Dhitaningrum and Izzati (2013) explained that the aspects of learning motivation are as follows: (a) encouraging someone as a mobilizer to release energy. In this case, the motivation is the activator of every undertaken activity; (b) determining the action direction, which is the objectives direction. Thus motivation can instruct the direction and activities which need to be done in accordance with the objectives desired; and (c) selecting the deed, for instance, determining what deeds must be done that are compatible in order to achieve the objectives. The aspects of Learning Motivation based on (Qudsyi et al., 2011) are as follow: (a) there is a desire, attitude, support, individual need to learn; (b) there is an ongoing state of individuals involvement to finish the task, as an activity form or attitude which is directed towards objective achievement; and (c) there are both commitment and intensity, owned by individuals to keep learning.

Dalyono (Istanti, 2015) explained that if a child has low motivation, it will cause he/she has difficulty in learning. It will certainly affect the learning success and the child's achievement. Mawarsih et al. (2013) in their research revealed that students who have a relatively low motivation seem reluctant to go to school which caused them to have low learning achievements. The research conducted by Indriani (2016) found that a lack of motivation is one of the reasons why the students still have low learning achievements. This can be seen from the mathematical value of 6.00 which is categorized as low achievement because it is below the standard of minimum completeness criteria. Jamal (2017) argued that the learning motivation is one of the factors causing low student learning achievement, especially in Social Science (IPS) subjects. Low learning achievements can be found through the value of the midterm exam (UTS) which is largely under the standard of minimum completeness criteria (KKM) of 75.

Anggraini (2016) believed that there are two factors that make a person motivated, namely: (1) internal factors. This motivation is formed due to self-awareness of understanding about the importance of self-development and provision to live life; and (2) external factors, i.e. stimulation from other people or surrounding environment that can affect the psychology of the person concerned. Saputra et al. (2018) revealed that motivation development can influence many factors of students' goals and aspirations, the ability of the students, physical and spiritual condition of the students, the environmental condition of the students, dynamic elements in learning, and the effort or encouragement of the teacher in motivating. In addition, Sulisty (2016) said that one of the factors that can inspire the students' learning motivation is the learning model used.

Several studies have been conducted related to various types of cooperative learning models. Akhsani and Jaelani (2018) in their research "Improving Students' Learning Motivation on Graph Theory Course through Snow Ball Throwing Method" argued that Snow Ball Throwing Type Cooperative learning is one of the innovative learning models that have a significant effect on increasing the students' learning motivation by enhancing students' cheerfulness and passion in the learning process. Suparta et al. (2015) research findings revealed that the use of cooperative learning models 'make a match' technique is effective to improve students' learning motivation in learning process. Raksun (2009) also found out that there is an increase in students' learning motivation

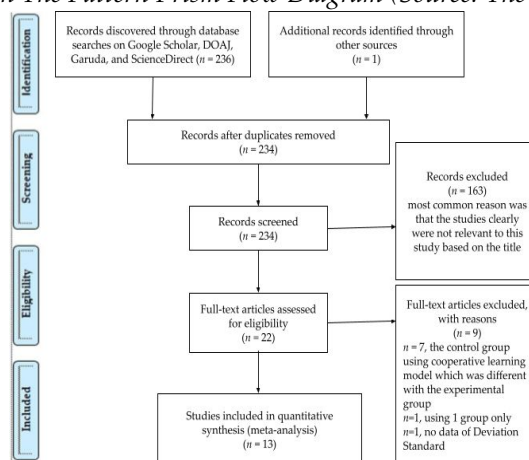
through cooperative learning type namely 'pair checks'. Sulasmi et al. (2013) revealed that the students' motivation for learning is increased after the implementation of the Jigsaw type of cooperative learning. Raksun (2009) added that the implementation of cooperative learning can improve the students' motivation.

Those various research findings have proved that cooperative learning can improve the motivation of the students' learning. Although there have been many studies on the effect of cooperative learning models on students' learning motivation, no findings have provided any conclusive generalizations regarding the models' impact on science learning motivation in elementary, junior high, and senior high school students. Therefore, a meta-analysis study is needed. This research tried to expose the scientific average evidence of previous research that cooperative learning models affect the motivation of the students' learning at elementary school, junior high school, and senior high school levels.

Methods

This study applied meta-analysis method. This meta-analysis is used to analyze the empirical research that has been conducted by previous researchers (Page et al., 2021; Retnawati et al., 2018). This meta-analysis examines three data sources consisting of a thesis, National and International Journal toward the influence of cooperative learning models on the students' motivation. The following criteria were used to select articles: (1) articles published from 2015 to 2019; (2) the types of experimental research used are an experimental class and a control class; (3) the experimental class used a cooperative learning model while the control used a conventional learning model. The selection process of data source follows the following figure:

Figure 1
Data Collection Chart Based on The Pattern Prism Flow Diagram (Source: The PRISMA Group, 2009)



Having performed the Data collection chart based on the pattern of Prism Flow Diagram based on Figure 1, data is obtained from sources on the following Table 1:

Table 1

Data Source

No	Parameter	Unit
1.	Thesis	2
2.	National Journal	9
3.	International Journal	2
Total		13

In administering the research results that will be aggregated in meta-analysis, coding needs to be conducted (Retnawati et al., 2018). This coding is an essential requirement to facilitate the data analysis. The coding in this study contains information about the effect of the cooperative learning models on the learning motivation about the authors and the research years, the education level of the research subjects, the number of samples on the experimental and control groups, the learning motivation mean score of the experimental and control groups, and the control group standard deviation of the research subject.

The stages of this study are (1) the identification of research based on education level of research subjects; (2) identification of the sample numbers and the learning motivation mean score of experimental and control groups as well as the control group standard deviation from the research subject; (3) calculating the effect size by using Glass' Pattern (Glass, 1981). The Effect size is calculated based on the learning motivation mean score of experimental and control group and the control group standard deviation from the research subject. This effect size calculation can be calculated based on the following formula:

$$\Delta = \frac{\bar{x}_{eksperimen} - \bar{x}_{kontrol}}{SD_{kontrol}}$$

With the effect size Δ criterion by Chen et al. (2010):

- 0.20, Small Effect
- 0.50, Moderate Effect
- 0.8, Big effect

Furthermore, to evaluate the effect size can also be based on the value of r^2 by Chen et al. (2010), as follows:

- $r^2 = 0.01$, Small effect
- $r^2 = 0.09$, Moderate effect
- $r^2 = 0.25$, Big effect

Results

Based on the data source analysis results of this study, it is obtained the effect size as follows:

Table 2
The Effect Size of Cooperative Learning Model towards Learning Motivation

No	Writer and Year	Level	X_K	X_E	SD	Δ	Categories Δ
1	Hakim and Syofyan (2018)	SD	68.96	69.46	3.3	0.15	Small
2	Kesnajaya et al. (2018)	SD	139.12	152.4	8.72	1.52	Big
3	Isnaeni (2016)	SMP	63.16	75.29	7.13	1.70	Big
4	Saparwadi (2015)	MTsN	82.4	85.93	6.11	0.58	Big
5	K.Darmika1 et al. (2014)	SMP	68.69	74.04	3.91	1.37	Big
6	Sundari et al. (2017)	SMP	56.8	63.8	4.97	1.41	Big
7	Taslim (2016)	SMA	87.83	91.25	6.05	0.57	Big
8	Arifin and Ruwanto (2017)	SMA	57.84	61.07	6.68	0.48	Medium
9	Mustami and Safitri (2018)	SMA	80.41	89.03	6.42	1.34	Big
10	Fauzi et al. (2017)	SMK	73.22	78.95	11.08	0.52	Big
11	Irham et al. (2017)	SMA	92.9	104.16	10.22	1.10	Big
12	Budiani and Diarta (2014)	SMA	224.9	251.1	14.1	1.86	Big
13	Ambarwati et al. (2017)	SMA	66.18	75.59	6.79	1.39	Big
The Mean Score			89.42	97.85			

Note: X_K : The mean scores of the control group learning motivation, X_E : The mean scores of the experimental group learning motivation

Table 2 shows that the mean score of the experimental group learning motivation is 97.85 which is greater than the mean score of the control group learning motivation of 89.42, which means that cooperative learning treatment can increase the students' learning motivation. This study found the effect size difference on the cooperative learning model toward the learning motivation on each education level. The results can be seen on the following table:

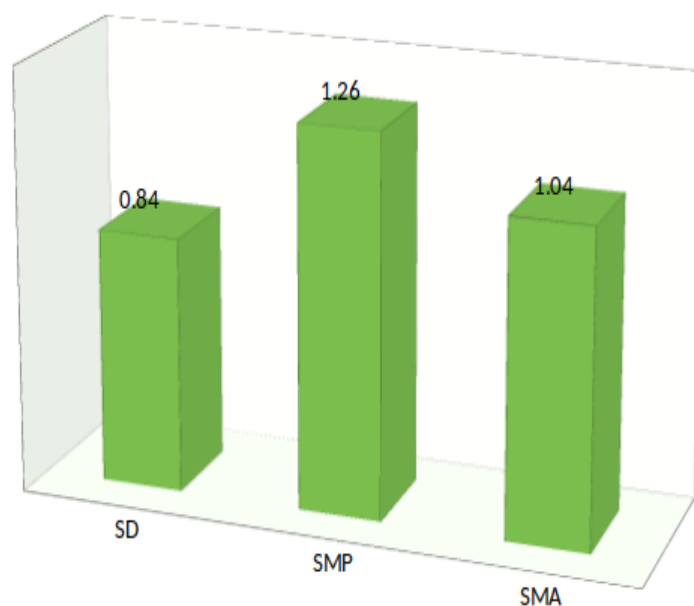
Table 3
The Effect Size Mean scores of Cooperative Learning Model on the learning motivation based on the education level

No	Level	Mean Score	SD (EZ)
1	Elementary School	0.84	0.97
2	Junior High School	1.2fa6	0.48
3	Senior High School	1.04	0.53

Based on Table 3, it is revealed that the mean score of the Effect Sizes in the Elementary, junior and high school levels are in the big effect category.

Figure 2

The Effect Size Mean Scores of The Cooperative Learning Effect on Learning Motivation Based on The Education Levels



Based on the education level in Figure 1, it is known that cooperative learning model has big effect on junior high school students' learning motivation. It is inferred that the implementation of cooperative learning models in junior high school students has a great effect, especially in improving the students' learning motivation so that cooperative learning is very suitable to be implemented in junior high school students. The normality test results on the Table 4 shows that the significant value (p) on the Kolmogorov-smirnov test and the Shapiro-wilk test are 0.001 ($p < 0.05$). The results reveal that the data are not in the normal distribution.

Table 4
Normality Test

	Group	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Average motivation	Control Group	.316	13	.001	.667	13	.000
	Experimental Group	.320	13	.001	.654	13	.000

Since the data of this meta-analysis study are not in the normal distribution, the hypothesis tests are performed using non-parametric statistical methods and applied the Mann Whitney test, as seen on the following Table 5:

Table 5
Test Result of Mann Whitney

	Motivation
Mann-Whitney U	65.000
Wilcoxon W	156.000
Z	-1.000
Asymp. Sig. (2-tailed)	.317
Exact Sig. [2*(1-tailed Sig.)]	.336

The basis of the decision on the Mann Whitney test using SPSS software which are shown: (1) If the value of ASYMP. Sig. (2-tailed) smaller than probability 0.05 then H0 rejected; (2) If the value of ASYMP. Sig. (2-tailed) is greater than probability 0.05 then H0 is acceptable. Based on Table 5, it is revealed that the value of ASYMP. Sig (2-tailed) as many as 0.317 is greater than the probability value of 0.05. Thus, there is no significant difference between the motivation mean scores of control group and experimental Group.

Discussion

The increasing of the students' learning motivation by using cooperative learning is also demonstrated by Susilo (2013) in his research where it was revealed that students' learning motivation increased after participating in a cooperative learning model of numbered head together type. Sulfemi (2019) showed that the use of Mind Mapping's cooperative learning model could increase the students' learning. Mustami and Safitri (2018) added that the students who learned using the NHT-ARIAS learning strategy are more motivated compared to those learned using the direct ARIAS learning strategy.

It means that the students' learning outcomes, by using cooperative learning model of NHT-ARIAS, are more motivated than ARIAS learning model. It is due to the cooperative approach of NHT type that provides many opportunities for students to be more active in the learning and teaching process. Sulisty (2016) research findings showed that the implementation of cooperative learning model of 'Teams Games Tournament' type can increase the students' learning motivation. Ahmad (2016) showed that the use of cooperative learning "pair checks" type can improve the students' learning outcomes. Laila et al. (2017) revealed that the application of cooperative learning of "group investigation" type can increase the students' learning motivation.

Cooperative learning is able to increase the students learning motivation. When the students are motivated to learn, it will give an effect on the students' cognitive learning outcomes. Piaget believed that a person's cognitive development occurs in four phases, namely, sensory-motor, pre-operation, concrete operation and formal operation (Suparno, 2001). Piaget asserted that learning will be more successful when it is adjusted to the level of the students' cognitive development. The students should be given the opportunity to do experiment with physical objects, which are supported by the interaction with peers and assisted by the teacher's questions predication. The teachers should provide a lot of stimulation to the students to actively interact with the environment, search for and find things

from the environment (Widyati, 2014). Asih (2018) stated that the stage of the students' cognitive development in the middle school by Piaget theory is called as the formal stage. At this stage, they develop new tools to manipulate information, can think abstractly, deductively and inductively that can consider the possibilities of the future, seek answers, handle problems flexibly, test hypotheses, and draw conclusions.

Cooperative learning is very suitable for the students because cooperative learning is a learning model that invites students to work together (Nurnawati et al., 2012). Trianto (2007) believed that cooperative learning arises from the concept that students will find it easier to understand the difficult concept if they discuss it with each other. Students routinely work in groups to help each other to solve problems. Ismawati and Hindarto (2011) stated that cooperative learning will encourage students to solve the difficult concepts and discuss those problems with their peers. Suherman in (Rini & Amin, 2013) added that the language of peers is easier to understand, due to the fact that there is no sense of reticent, inferiority, embarrassment in which they are expected to ask difficult problems.

Another research conducted by Sanz, Fernández-Espinola et al. (2020) who revealed that cooperative learning can increase the type of intrinsic and regulation motivation in junior high school students. In addition, motivation in cooperative learning can be increased through two things, namely teachers must carry out creative learning with the help of teaching materials (Hidayati et al., 2018), and provide praise or appropriate punishment (Darnawan, 2018). Hamzah and Nasri (2020) in the results of his research explained that cooperative learning can increase students' learning motivation and is able to change their perception of learning in a positive direction. The students' perception after experiencing cooperative learning in a long period of time reflects four positive ideas, namely: cooperation, linkage, enjoyment, and novelty.

A different argument is explained by Alghamdy (2019) that stated that it is possible that in cooperative learning, the division of groups is based on the level of student achievement in the class which is likely to create feelings of displeasure in some students, among them is the dependence of low-achieving students on high-achieving students. This is not in accordance with the characteristics of cooperative learning, as Ghaith (2018) explained that cooperative learning is based on teamwork. It require students to need each other positively to the extent that each student in the group feels responsible for his own task, and even cares about the tasks of friends in the group to determine the success of himself and his group.

Putri (2018) found on her research that peer-to-peer acceptance is an important part that directly affects the students' learning motivation. Rahman (2014) suggested that parents' support and learning facilities in schools have an effect on learning motivation toward the students in junior high school. Sujiantari et al. (2016) also argued that reward and punishment have a significant influence on the learning motivation in junior high school. Widoyoko and Rinawat (2012) added that teacher mastery of the instructional materials and various learning strategies in accordance with the characteristics of learning materials and characteristics of students are able to foster the students' learning motivation in junior high school.

Even though in testing the hypothesis using Mann Whitney, it shows there is no significant

difference between the motivation's mean scores between the control and the experimental group, every learning model has its own advantages and disadvantages on its implementation.

The advantages of cooperative learning model based on Rosita and Leonard (2015) are: (1) the students are able to formulate and ask questions about the material being taught because they indirectly acquire an example of questions posed by educators, and they have the opportunity to think about the materials being taught; (2) the students will be trained to apply the concept of exchanging opinions and thoughts with their friends in solving problems; (3) the students are more active in learning because of completing their duties in groups, in which each group only consists of two people; (4) the students have the opportunity to present their discussion with all students to spread their idea; and (5) the teachers are able to monitor the learners frequently in the learning process. According to Slavin (Pakarya, 2008), the weaknesses of cooperative learning is that the role of group members who are clever becoming more dominant. In addition to that, cooperative learning take a relatively longer time compared to conventional learning; it can even cause learning materials to develop to the point that it can not be adjusted to the existing curriculum if the teacher is not experienced. In teaching skills terms, teachers need to prepare and have a long experience in order to implement the cooperative learning well.

Conclusion

Based on the research findings, the meta-analysis of previous research data that cooperative learning models affect student learning motivation at three school levels concludes that students in junior high school was greater than at other educational levels. It also reveals that there is no significant difference between the mean motivation score of the control group using conventional learning models and the experimental group using cooperative learning models. Further research is still needed with more comprehensive data.

Recommendation

It is advised that comparable study be done in the future with a larger sample size or that research be done similarly but with a different focus, such as learning outcomes, digital learning, and 21st century skills (basic literacy, competency, and character qualities). In addition, a variety of learning models, not merely cooperative learning models, have been established in Indonesia to encourage 21st century abilities.

Declarations

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Author's Contribution


ED: Responsible for ideas, data interpretation, discussions, and article manuscript drafts FN: Processing, analyzing, and talking about data SA: Gathering and discussing data AUT: Gathering and discussing data

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References

- Adliyani, Z. O. N. (2015). Pengaruh perilaku individu terhadap hidup sehat [The influence of individual behavior on healthy living]. *Jurnal Majority*, 4(7), 109–114.
- Ahmad, F. (2016). Penerapan model pembelajaran kooperatif tipe Pair Checks dalam meningkatkan motivasi dan hasil belajar IPA terpadu siswa kelas VIIIA SMP Negeri 1 Tabulahan Kab. Mamasa [The application of the Pair Checks cooperative learning model in increasing the motivation and integrated science learning outcomes of class VIIIA students at SMP Negeri 1 Tabulahan Kab. Mamasa]. *Sainsmat: Jurnal Ilmiah Ilmu Pengetahuan Alam*, 5(2), 137–142. <https://doi.org/10.35580/sainsmat5232412016>
- Akhsani, L., & Jaelani, A. (2018). Peningkatan kemampuan pemecahan masalah matematis mahasiswa melalui metode snow ball throwing pada mata kuliah teori graf [Improving students' mathematical problem solving abilities through the snow ball throwing method in graph theory courses]. *Kontinu: Jurnal Penelitian Didaktik Matematika*, 2(1), 58. <https://doi.org/10.30659/kontinu.2.1.58-71>
- Alcalá, D. H., Garijo, A. H., Pérez-Pueyo, Á., & Fernández-Río, J. (2019). Cooperative learning and students' motivation, social interactions and attitudes: Perspectives from two different educational stages. *Sustainability*, 11(24), 7005. <https://doi.org/10.3390/su11247005>
- Alghamdy, R. Z. (2019). EFL learners' reflections on cooperative learning: Issues of implementation. *Theory and Practice in Language Studies*, 9(3), 271–277.

- Al-Tabany, T. I. B. (2017). *Mendesain model pembelajaran inovatif, progresif, dan kontekstual: Konsep, landasan dan implementasinya pada kurikulum 2013 (Kurikulum Tematik Integratif/KTI) [Designing innovative, progressive and contextual learning models: Concepts, foundations and implementation in the 2013 curriculum]*. Kencana. <http://doi.org/10.25273/pe.v1i02.39>
- Ambarwati, E., Yusrin, Y., & Winaryati, E. (2017). *Pengaruh model pembelajaran tipe take and give berbasis pendidikan karakter terhadap motivasi dan hasil belajar siswa dalam pembelajaran kimia [The influence of the take and give type learning model based on character education on student motivation and learning outcomes in chemistry learning]*. <https://jurnal.unimus.ac.id/index.php/psn12012010/article/view/3049>
- Anggraini, I. S. (2016). Motivasi belajar dan faktor-faktor yang berpengaruh: Sebuah kajian pada interaksi pembelajaran mahasiswa [Learning motivation and influencing factors: A study on student learning interactions]. *Formatif: Jurnal Ilmiah Pendidikan MIPA*, 1(2), 168–181. <http://doi.org/10.25273/pe.v1i02.39>
- Arifin, I., & Ruwanto, B. (2017). Efektivitas penerapan model pembelajaran koopeartif tipe think pairs share terhadap motivasi dan hasil belajar fisika [The effectiveness of the application of the think pair share cooperative learning model on motivation and physics learning outcomes]. *Jurnal Pendidikan Fisika*, 6(7), 577–583. <https://journal.student.uny.ac.id/ojs/index.php/pfisika/article/view/8384>
- Asih, T. (2018). Perkembangan tingkat kognitif peserta didik di Kota Metro [The development of the cognitive level of students in Metro City]. *Didaktika Biologi: Jurnal Penelitian Pendidikan Biologi*, 2(1), 9–17. <https://doi.org/10.32502/dikbio.v2i1.909>
- Budiani, N. W., & Diarta, I. M. (2014). Pengaruh penerapan model pembelajaran kooperatif tipe gi (group investigation) terhadap motivasi belajar siswa SMA Negeri 1 Kintamani [The effect of applying the gi type cooperative learning model (group investigation) on the learning motivation of SMA Negeri 1 Kintamani]. *Jurnal Santiaji Pendidikan (JSP)*, 4(2), 94–100. <https://doi.org/10.36733/jsp.v4i2.449>
- Chen, H., Cohen, P., & Chen, S. (2010). How big is a big odds ratio? interpreting the magnitudes of odds ratios in epidemiological studies. *Communications in Statistics - Simulation and Computation*, 39(4), 860–864. <https://doi.org/10.1080/03610911003650383>
- Cleopatra, M. (2015). Pengaruh gaya hidup dan motivasi belajar terhadap prestasi belajar Matematika [The influence of lifestyle and learning motivation on mathematics learning achievement]. *Formatif: Jurnal Ilmiah Pendidikan MIPA*, 5(2), 168–181. <http://dx.doi.org/10.30998/formatif.v5i2.336>
- Darmawan, D. M. (2018). Peningkatan motivasi dan hasil belajar IPA melalui pembelajaran kooperatif tipe TGT [Increasing motivation and science learning outcomes through TGT type cooperative learning]. *Basic Education*, 7(13), 1281–1290.
- Daud, F. (2012). Pengaruh kecerdasan emosional (EQ) dan motivasi belajar terhadap hasil belajar siswa SMA 3 Negeri kota Palopo [The effect of emotional intelligence (EQ) and learning motivation

- on the learning outcomes of SMA 3 Negeri Palopo students]. *Jurnal Pendidikan dan Pembelajaran (JPP)*, 19(2), 243–255.
- Dhitaningrum, M., & Izzati, U. A. (2013). Hubungan antara persepsi mengenai dukungan sosial orang tua dengan motivasi belajar siswa SMA Negeri 1 Gondang Kabupaten Tulungagung [The relationship between perceptions of parental social support with students' learning motivation at SMA Negeri 1 Gondang, Tulungagung Regency]. *Character: Jurnal Penelitian Psikologi*, 1(2).
- Emda, A. (2018). Kedudukan motivasi belajar siswa dalam pembelajaran [The position of students' learning motivation in learning]. *Lantanida Journal*, 5(2), 93–196. <https://doi.org/10.22373/lj.v5i2.2838>
- Fauzi, M. N., Usodo, B., & Subanti, S. (2017). The effect of make a match (mam) type model and bamboo dance type model through cooperative learning on students motivation. *Suska Journal of Mathematics Education*, 3(1), 26. <https://doi.org/10.24014/sjme.v3i1.3511>
- Feist, J., & Feist, G. (2008). *Theories Of Personality*. Pustaka Pelajar.
- Fernández-Espinola, C., Robles, M. T. A., Collado-Mateo, D., Almagro, B. J., Viera, E. C., & Fuentes-Guerra, F. J. G. (2020). Effects of cooperative-learning interventions on physical education students' intrinsic motivation: A systematic review and meta-analysis. *International Journal of Environmental Research and Public Health*, 17(12), 4451. <https://doi.org/10.3390/ijerph17124451>
- Gambari, A. I., Yusuf, M. O., & Thomas, D. A. (2015). Effects of computer-assisted stad, ltm and ici cooperative learning strategies on nigerian secondary school students' achievement, gender and motivation in physics. *Journal of Educational, Health and Community Psychology*, 3(4), 1–16.
- Ghaith, G. M. (2018). Teacher perceptions of the challenges of implementing concrete and conceptual cooperative learning. *Issues in Educational Research*, 28(2), 385–404. <https://www.iier.org.au/iier28/ghaith.pdf>
- Hakim, S. A., & Syofyan, H. (2018). Pengaruh model pembelajaran kooperatif tipe teams games tournament (TGT) Terhadap motivasi belajar Ipa Di Kelas Iv Sdn Kelapa Dua 06 Pagi Jakarta Barat [The Effect of the Teams Games Tournament (TGT) Cooperative Learning Model on Science Learning Motivation in Class Iv Sdn Kelapa Dua 06 Morning West Jakarta]. *International Journal of Elementary Education*, 1(4), 249. <https://doi.org/10.23887/ijee.v1i4.12966>
- Hamzah, U. S., & Nasri, N. M. (2020). Persepsi murid terhadap pembelajaran kooperatif dalam mata pelajaran Bahasa Inggris sekolah rendah [Student perceptions of cooperative learning in low school English]. *International Journal of Modern Education*, 2(7), 128–140.
- Hanafy, M. S. (2017). Konsep belajar dan pembelajaran [Learn and study concept]. *Lentera Pendidikan: Jurnal Ilmu Tarbiyah dan Keguruan*, 17(1), 66–79. <https://doi.org/10.24252/lp.2014v17n1a5>
- Hergenhahn, B. R., & Olson, M. H. (2015). *Theories of learning*. Kencana.
- Hidayati, L. A., Kharisma, I., & Satriani, I. (2018). Students' perception in applying cooperative learning in Efl classroom. *Eternal English, Teaching, Learning, and Research Journal*, 4(1), 16–30.

- Himawan, P. M., R. M., A., R. N., & S., N. M. (2018). *Model pembelajaran kelompok sistem perilaku: Behavior system group learning [Behavior system group learning model: Behavior system group learning]*. Universitas Negeri Yogyakarta.
- Indriani, A. (2016). Pengaruh motivasi belajar siswa kelas V terhadap prestasi belajar matematika di SD Negeri Bejirejo kecamatan Kunduran kabupaten Blora [The influence of fifth grade students' learning motivation on mathematics learning achievement at SD Negeri Bejirejo, Kunduran sub-district, Blora district]. *JIPM (Jurnal Ilmiah Pendidikan Matematika, 4(2)*, 134–139. <http://doi.org/10.25273/jipm.v4i2.848>
- Irham, I., Hala, Y., & dan Alimuddin Al. (2017). Pengaruh model pembelajaran kooperatif tipe jigsaw terhadap motivasi belajar dan hasil belajar biologi siswa kelas XI IPA SMA Negeri 18 Bulukumba [The effect of the jigsaw type cooperative learning model on learning motivation and learning outcomes in biology class XI IPA students at SMA Negeri 18 Bulukumba]. *UNM Journal of Biological Education, 1(1)*, 1–12.
- Ismawati, N., & Hindarto, N. (2011). Penerapan model pembelajaran kooperatif dengan pendekatan struktural *Two Stay Two Stray* untuk meningkatkan hasil belajar siswa kelas X SMA [The application of the cooperative learning model with the Two Stay Two Stray structural approach to improve the learning outcomes of class X high school students]. *Jurnal Pendidikan Fisika Indonesia, 7(1)*, 38–41. <https://doi.org/https://doi.org/10.15294/jpfi.v7i1.1067>
- Isnaeni. (2016). *Efektivitas penerapan pembelajaran kooperatif tipe TGT (Teams Games Tournament) terhadap motivasi belajar matematika siswa kelas VII SMPN 2 Takalar [The effectiveness of the application of cooperative learning type TGT (Teams Games Tournament) to the motivation to learn mathematics in class VII SMPN 2 Takalar]* (Doctoral dissertation). Thesis, Universitas Islam Negeri Alauddin Makassar.
- Istanti, R. (2015). Pengaruh model *Problem Based Learning* terhadap motivasi belajar IPA siswa kelas V SDN Gadingan [The effect of the Problem Based Learning model on the motivation to learn science in grade V SDN Gadingan]. *Basic Education, 5(12)*, 1–8.
- Jamal, S. (2017). Pengaruh motivasi belajar terhadap prestasi belajar siswa kelas VIII SMPN 2 Srumbung [The effect of learning motivation on student achievement in class VIII SMPN 2 Srumbung]. *Social Studies, 6(4)*, 469–479.
- K.Darmika1, Suma, K., & Suastra, I. W. (2014). Pengaruh model pembelajaran kooperatif murder terhadap motivasi belajar dan prestasi belajar IPA siswa smp [The influence of the murder cooperative learning model against learning motivation and science learning achievement junior high school student]. *e-Journal Program Pascasarjana Universitas Pendidikan Ganesha, 4*, 1–12.
- Kesnajaya, I. K., Dantes, N., & Dantes, G. R. (2018). Pengaruh model pembelajaran kooperatif tipe jigsaw terhadap motivasi belajar dan hasil belajar ipa siswa kelas v pada sd negeri 3 tianyar barat [the effect of the jigsaw cooperative learning model on learning motivation and science learning outcomes fifth grade students at sd negeri 3 tianyar barat]. *e-Journal Program Pascasarjana Universitas Pendidikan Ganesha, 5*, 1–9.

- Laila, N., Hariyono, & Sumarmi. (2017). Meningkatkan motivasi belajar siswa pada pembelajaran IPS menggunakan model pembelajaran kooperatif tipe *Group Investigation* [Increasing student learning motivation in social studies learning using the Group Investigation cooperative learning model]. *Jurnal Teori dan Praksis Pembelajaran IPS*, 1(2), 123–129.
- Mawarsih, S. E., Susilaningsih, & Hamidi, N. (2013). Pengaruh perhatian orang tua dan motivasi belajar terhadap prestasi belajar siswa SMA Negeri Jumapolo [The effect of parental attention and learning motivation on student achievement at SMA Negeri Jumapolo]. *Jupe-Jurnal Pendidikan Ekonomi*, 1(3).
- Metzler, M. W. (2005). *National standards for physical education (naspe)*. Mc Graw Hill Publisher.
- Mulyaningsih, I. E. (2014). Pengaruh interaksi sosial keluarga, motivasi belajar, dan kemandirian belajar terhadap prestasi belajar [The effect of family social interaction, learning motivation, and learning independence on academic achievement]. *Jurnal Pendidikan dan Kebudayaan*, 20(4), 441–451. [10.24832/jpnk.v20i4.156](https://doi.org/10.24832/jpnk.v20i4.156)
- Mustami, M. K., & Safitri, D. (2018). The effects of numbered heads together-assurance relevance interest assessment satisfaction on students' motivation. *International Journal of Instruction*, 11(3), 123–134. <https://doi.org/10.12973/iji.2018.1139a>
- Nurnawati, E., Yulianti, D., & Susanto, H. (2012). Peningkatan kerjasama siswa SMP melalui penerapan pembelajaran kooperatif pendekatan *Think Pair Share* [Increasing the cooperation of junior high school students through the application of cooperative learning Think Pair Share approach]. *UPEJ Unnes Physics Education Journal*, 1(1), 1–7. <https://doi.org/10.15294/upej.v1i1.764>
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., & Mulrow, C. D. (2021). The PRISMA 2020 statement: an Updated guideline for reporting systematic reviews. *International Journal of Surgery*, 88(105906). <https://doi.org/10.1016/j.ijssu.2021.105906>
- Pakarya, Y. (2008). Penerapan model pembelajaran kooperatif pada pembelajaran sejarah [Application of the cooperative learning model in learning history]. *Jurnal Inovasi*, 5(2).
- Putri, S. R. (2018). Pengaruh penerimaan oleh teman sebaya terhadap motivasi belajar siswa di SMP dan SMA Muhammadiyah Se-Kota Binjai [The effect of acceptance by peers on student learning motivation in Muhammadiyah Middle and High Schools in Binjai City]. *Biblio Couns: Jurnal Kajian Konseling dan Pendidikan*, 1(3), 1105–111. <https://doi.org/10.30596/bibliocouns.v1i3.2251>
- Qudsyi, H., Indriaty, L., Herawaty, Y., Saifullah, Khaliq, I., & Setiawan, J. (2011). Pengaruh metode pembelajaran kooperatif (cooperative learning) dan motivasi belajar terhadap prestasi belajar siswa SMA [The effect of cooperative learning methods and learning motivation on high school student achievement]. *Proyeksi: Jurnal Psikologi*, 6(2), 34–49. <http://dx.doi.org/10.30659/jp.6.2.34-49>
- Rachmah, D. N. (2017). Effects of jigsaw learning method on students' self-efficacy and motivation to learn. *Journal of Educational, Health and Community Psychology*, 6(3), 1. <https://doi.org/10.12928/jehcp.v6i3.8314>

- Rahman, M. F. (2014). Pengaruh dukungan orang tua dan fasilitas belajar di sekolah terhadap prestasi belajar melalui motivasi belajar siswa kelas VIII SMP Negeri 2 Ungaran [The effect of parental support and learning facilities at school on learning achievement through the learning motivation of class VIII students of SMP Negeri 2 Ungaran]. *Economic Education Analysis Journal*, 3(2), 410–417.
- Raksun, A. (2009). Implementasi pembelajaran kooperatif untuk meningkatkan motivasi dan hasil belajar mahasiswa program studi pendidikan Fisika FKIP Universitas Mataram pada matakuliah Biologi Dasar [Implementation of cooperative learning to increase motivation and student learning outcomes of the Physics education study program FKIP University of Mataram in Basic Biology course]. *Jurnal Pijar MIPA*, 4(1), 6–10. <http://dx.doi.org/10.29303/jpm.v4i1.175>
- Razak, F. (2016). The effect of cooperative learning on mathematics learning outcomes viewed from students' learning motivation. *JRAMathEdu (Journal of Research and Advances in Mathematics Education)*, 1(1), 49–55. <https://doi.org/10.23917/jramathedu.v1i1.1785>
- Retnawati, H., Apino, E., Kartianom, Djidu, H., & Anazifa, R. D. (2018). *Pengantar meta analisis [Introduction to meta analysis]*. Yogyakarta, Parama Publishing.
- Rini, D. S., & Amin, S. M. (2013). Penerapan pembelajaran kooperatif berbasis tutor sebaya pada materi himpunan di kelas VII-G SMPN 1 Semanding Kab. Tuban [The application of peer tutor-based cooperative learning to set material in class VII-G SMPN 1 Semanding Tuban]. *Jurnal Matematika*, 2(2).
- Rosita, I., & Leonard. (2015). Meningkatkan kerja sama siswa melalui pembelajaran kooperatif tipe Think Pair Share [Improving student cooperation through Think Pair Share type cooperative learning]. *Formatif: Jurnal Ilmiah Pendidikan MIPA*, 3(1), 1–10. <http://dx.doi.org/10.30998/formatif.v3i1.108>
- Saparwadi, L. (2015). Pengaruh cooperative learning tipe make a match terhadap motivasi dan hasil belajar matematika siswa [The effect of make a match cooperative learning type on students' motivation and mathematics learning outcomes]. *Beta: Jurnal Tadris Matematika*, 8(1), 51–65. <https://jurnalbeta.ac.id/index.php/betaJTM/article/view/24>
- Saputra, H. D., Ismet, F., & Andriza. (2018). Pengaruh motivasi belajar terhadap hasil belajar siswa SMK [The effect of learning motivation on learning outcomes of SMK students]. *INVOTEK: Jurnal Inovasi Vokasional dan Teknologi*, 18(1), 25–30. <https://doi.org/10.24036/invotek.v18i1.168>
- Sujiantari, N. K., Sujana, I. N., & Zukhri, A. (2016). Pengaruh *reward* dan *punishment* terhadap motivasi belajar siswa dalam pembelajaran IPS (Studi pada SMP Negeri 1 Singaraja Kelas VIII Tahun Ajaran 2015/2016) [The effect of reward and punishment on students' learning motivation in social studies learning (Study at SMP Negeri 1 Singaraja Class VIII Academic Year 2015/2016)]. *Jurnal Pendidikan Ekonomi Undiksha*, 7(2), 2012. <https://doi.org/10.23887/jjpe.v7i2.7573>
- Sulasmi, N. M., Lasmawan, I. W., & Landrawan, I. W. (2013). Penerapan model pembelajaran kooperatif tipe Jigsaw untuk meningkatkan motivasi dan hasil belajar siswa pada mata pelajaran PKn di kelas X 2 SMA Negeri 2 Banjar Tahun Ajaran 2012/2013 [Application of the Jigsaw cooperative

- learning model to increase student motivation and learning outcomes in Civics subjects in class X 2 SMA Negeri 2 Banjar in the 2012/2013 Academic Year]. *Jurnal Pendidikan Kewarganegaraan Undiksha*, 2(1), 1–12. <http://dx.doi.org/10.23887/jpku.v2i1.615>
- Sulfemi, W. B. (2019). Model pembelajaran kooperatif *mind mapping* berbantu audio visual dalam meningkatkan minat, motivasi dan hasil belajar IPS [The cooperative learning model mind mapping is assisted by audio visual in increasing interest, motivation and social studies learning outcomes]. *Jurnal Pendidikan Ilmu Pengetahuan Sosial Indonesia*, 4(1), 13–19. <https://doi.org/http://dx.doi.org/10.26737/jpipi.v4i1.1204>
- Sulistyo, I. (2016). Peningkatan motivasi belajar dengan menerapkan model pembelajaran kooperatif TGT pada pelajaran PKN [Increasing motivation to learn by applying the TGT cooperative learning model in PKN lessons]. *Jurnal Studi Sosial*, 4(1), 14–19.
- Sundari, T., Purwantodan, A., & Risdianto, E. (2017). Pengaruh model kooperatif tipe team game tournament(tgt)dengan media ular tangga fisika terhadap minat, motivasi dan hasil belajar siswa smpn 10 kota bengkulu [The influence of the cooperative model type team game tournament (TGT) with physics snakes and ladders media on students' interest, motivation and learning outcomes at SMPN 10 Bengkulu City]. *Jurnal Pembelajaran Fisika*, 1(1), 1–8. <https://ejournal.unib.ac.id/index.php/jipf/article/view/3544>
- Suparno, P. (2001). *Teori perkembangan kognitif [Cognitive development theory]*. Yogyakarta, Kanisus.
- Suparta, D. G., Lasmawan, I. W., & Marhaeni, A. A. I. N. (2015). Pengaruh model pembelajaran kooperatif teknik *make a match* terhadap motivasi belajar dan hasil belajar IPS [The effect of the make a match cooperative learning model on learning motivation and social studies learning outcomes]. *Jurnal Pendidikan Dasar Genesha*, 5(1), 1–12.
- Suprihatin, S. (2015). Upaya guru dalam meningkatkan motivasi belajar siswa [Efforts of teachers in increasing student motivation]. *PROMOSI (Jurnal Pendidikan Ekonomi)*, 3(1), 73–82. <https://doi.org/10.24127/ja.v3i1.144>
- Susilo, Y. (2013). Peningkatan motivasi belajar siswa melalui model pembelajaran kooperatif tipe *Numbered Head Together* (Nht) materi ajar perbandingan dan fungsi trigonometri pada siswa kelas X [Increasing student learning motivation through the Numbered Head Together (Nht) type cooperative learning model teaching materials comparison and trigonometry functions in class X students]. *MATHEdunesa*, 2(2).
- Taslim, R. (2016). *Pengaruh penerapan model pembelajaran kooperatif tipe examples non examples terhadap motivasi belajar, aktivitas belajar dan hasil belajar pada pokok bahasan jaringan hewan kelas IX IPA SMA Negeri 1 Pattalassang [The effect of applying examples and non-examples cooperative learning models to learning motivation, learning activities and learning outcomes on the subject of animal tissue class IX IPA SMA Negeri 1 Pattalassang]* (Doctoral dissertation). Thesis, Fakultas Tarbiyah dan Keguruan UIN Alauddin Makassar.
- Trianto. (2007). *Model pembelajaran terpadu dalam teori dan praktek [Integrated learning model in theory and practice]*. Surabaya, Prestasi Pustaka Publisher.

- Wedyawati, N., & Lisa, Y. (2019). *Pembelajaran IPA di Sekolah Dasar [Science Learning in Elementary Schools]*. Yogyakarta, Deepublish.
- Widoyoko, S. E. P., & Rinawat, A. (2012). Pengaruh kinerja guru terhadap motivasi belajar siswa [Effect of teacher performance on student motivation]. *Jurnal Cakrawala Pendidikan*, 5(2), 278–289. <https://doi.org/10.21831/cp.v5i2.1563>
- Widyati, W. (2014). Belajar dan pembelajaran perspektif teori kognitivisme [Learning and learning from the perspective of cognitivism]. *Jurnal Biologi Science & Education*, 3(2), 177–187. <https://doi.org/http://dx.doi.org/10.33477/bs.v3i2.521>
- Woolfolk, A. (2009). *Educational psychology active learning edition translated by: Helly prajitno soetjpto*. Pearson Education, Inc.