

The Effect of the Jigsaw Type Learning Model in Improving Student Learning Outcomes at MAN 1 Ogan Komering Ilir

Febri Sapta Pradana¹, Putri Cicilia Kristina², Bambang Hermansah³

^{1,2,3}Universitas PGRI Palembang

Corresponding author: febrisapta02@gmail.com

Abstrak

Pendidikan jasmani merupakan komponen penting dalam keseluruhan proses pendidikan, yang memanfaatkan aktivitas fisik sebagai sarana untuk mengembangkan kemampuan siswa. Memahami dan menerapkan model pembelajaran dalam pendidikan jasmani merupakan kunci untuk menciptakan proses pembelajaran yang efektif. Penelitian ini bertujuan untuk membuktikan pengaruh Model Pembelajaran Kooperatif Tipe Jigsaw terhadap peningkatan hasil belajar siswa. Penelitian ini dilakukan di MAN 1 OKI dengan menggunakan pendekatan kuantitatif. Teknik pengumpulan data dilakukan melalui tes tertulis berupa soal pilihan ganda, observasi, dan dokumentasi. Data yang diperoleh dianalisis menggunakan metode analisis deskriptif, uji normalitas, uji homogenitas, dan uji perbedaan hasil sebelum dan sesudah perlakuan. Berdasarkan hasil pengumpulan dan analisis data, diperoleh t tabel = 1,7171 dan t hitung = 2,743. Karena t hitung = 2,743 > 1,7171, dapat disimpulkan bahwa model pembelajaran kooperatif tipe jigsaw berpengaruh terhadap peningkatan hasil belajar sprint di MAN 1 OKI.

Kata kunci: Pendidikan, jigsaw, hasil belajar, jasmani

Abstract

Physical education is an important component in the overall educational process, which utilizes physical activity as a means to develop students' abilities. Understanding and implementing learning models in physical education are the key to creating an effective learning process. This study aims to prove the effect of the Jigsaw Type Cooperative Learning Model on improving student learning outcomes. This study was conducted at MAN 1 OKI using a quantitative approach. Data collection techniques were carried out through written tests in the form of multiple choice questions, observation, and documentation. The data obtained were analyzed using descriptive analysis methods, normality tests, homogeneity tests, and test for differences in results before and after treatment. Based on the results of data collection and analysis, t table = 1.7171 and t count = 2.743 were obtained. Because t count = 2.743 > 1.7171, it can be concluded that the jigsaw type cooperative learning model has an effect on improving sprint learning outcomes at MAN 1 OKI.

Keywords: Education, jigsaw, learning outcomes, physical

1. INTRODUCTION

Education is a fundamental aspect of human development and serves as a basic right for every individual, enabling personal growth and societal advancement (Maharani, Guru, et al., 2025, p. 366). Through education, individuals gain knowledge, develop critical thinking, and cultivate behaviors that prepare them for future challenges. Nadiah (Agustina & Maisura, 2025, p. 243) emphasizes that education shapes the whole person through formal, non-formal, and informal channels, fostering intellectual, moral, and social development. Educational processes include instilling discipline, promoting self-care, cultivating respect

History:

Received : 2 March 2026
Revised : 2 March 2026
Accepted : 4 March 2026
Published : 7 March 2026

Publisher: Horizon Edukasi Prima Indonesia

Licensed: This work is licensed under a Creative Commons Attribution 4.0 License



for others, and nurturing cooperative behavior (Sujana, 2019, p. 25). Physical education, as part of the broader educational system, contributes not only to physical growth but also to moral development, supporting the ideals of the Indonesian national education framework and the holistic development of students (Tradisional et al., 2025, p. 1157).

One effective approach to enhancing learning outcomes is Cooperative Learning, a model that emphasizes student collaboration to achieve shared learning goals. In this model, students are grouped heterogeneously, allowing them to support each other and act as learning resources for their peers. The cooperative learning framework is based on the principle that students learn more effectively when they engage in mutual teaching and assistance. Within cooperative learning, students gain knowledge from both the instructor and their peers, fostering an environment of collaboration and shared responsibility.

A specific type of cooperative learning, the Jigsaw method, involves dividing students into small heterogeneous groups, typically of four to five members, where each student is assigned a portion of the learning material. Each member is responsible for mastering their portion and teaching it to the rest of the group (Sulhan, 2020, p. 53). Developed by Elliot Aronson and colleagues at the University of Texas and Johns Hopkins University in 1978, the Jigsaw model creates positive interdependence, making each student an expert in their assigned topic and linking the group's success to individual contributions (Wuriasih et al., 2019, p. 72). The model encourages personal accountability while promoting group collaboration, ensuring that students actively engage in learning and support one another (Kahar et al., 2020, p. 280; Hamzah et al., 2019, p. 59).

Observations at MAN 1 Ogan Komerang Ilir revealed that the lack of varied learning models in teaching is a significant obstacle affecting student performance, particularly in sprint learning outcomes. Implementing the Jigsaw-type cooperative learning model is expected to address this challenge by increasing student engagement, understanding, and mastery of the material. Previous research supports this approach: studies at SMKN 1 Pleret, SMA Negeri 1 Bantul, and SMP Negeri 4 Lahomi demonstrated that Jigsaw implementation significantly improved both average learning outcomes and student completion rates across subjects such as mathematics, physics, and social studies. Similar findings were observed at SMA Negeri 1 Ampel, SMP Negeri 1 Mahu, and vocational high schools, where the Jigsaw method enhanced academic performance, cognitive understanding, affective development, and practical skills. Furthermore, integrating the Jigsaw model with supporting media, such as videos at SMA Negeri 1 Pahunga Lodu, further optimized learning outcomes.

Based on this background, this study aims to examine the effect of the Jigsaw-type cooperative learning model on student learning outcomes at MAN 1 Ogan Komerang Ilir. By implementing this approach, the research seeks to provide actionable insights for improving teaching strategies, increasing student engagement, and enhancing overall learning performance in the school context.

2. METHOD

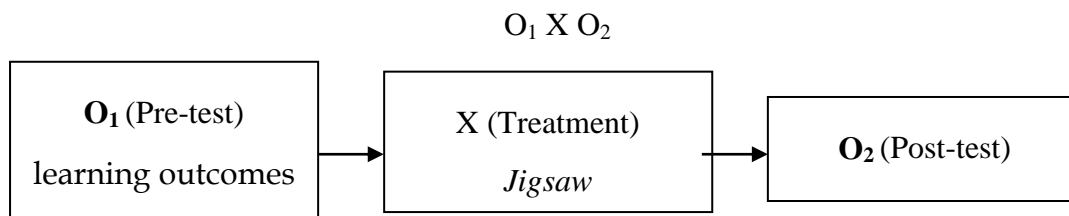
To obtain optimal research results in accordance with the objectives, this study used an experimental method, specifically a quasi-experimental one with a one-group pretest-posttest design. This method was chosen based on an experimental approach, where an initial measurement (pre-test) is conducted before treatment and a final measurement (post-test) after treatment is administered. The experimental method is considered the most appropriate for examining cause-and-effect relationships. This aligns with Arikunto's opinion (2013, hlm. 123) which states that experimental research is a way to identify causal relationships between two variables, where researchers deliberately introduce certain variables while controlling or eliminating other factors that may influence the results.

3. RESULT AND DISCUSSION

Result

3.1 Treatment design

The appropriate research design for this type of research is (one group pretest-posttest design) which can be described as follows. The research paradigm can be described as follows :



O_1 = pre-test measurement results (before treatment)

O_2 = post-test measurement results (after being given treatment)

X = treatment

Effect of treatment = $O_2 - O_1$

b). Data collection technique

To obtain objective and valid data on the sprint learning achievements of class X students at MAN 1 OKI, the researcher used several techniques in data collection as follows:

1. Test

A test is a series of instruments or tools used to assess the intelligence, abilities, or talents of an individual or group. To obtain data related to the learning outcomes of fifth-grade students, the researcher used a pretest and posttest to measure student learning achievement with the standard student learning outcomes that meet the minimum completion

criteria (KKM) for athletic learning outcomes, namely 70. The test questions were in the form of multiple-choice with 20 questions.

There are two types of test data collection techniques: pretest and posttest. A pretest is a test administered before learning begins and aims to determine students' initial abilities regarding the material to be taught. Pretests also have benefits such as encouraging students to be more active in learning. A posttest (final test) is a test administered at the end of each teaching unit program. The purpose of a posttest is to assess the extent to which students have mastered the material taught (knowledge and skills) after experiencing a learning activity using the jigsaw model. Comparing pretest and posttest results can be used to measure the effectiveness of the learning program.

2. Observation

Observation is the process of collecting data through observation to determine the extent to which an action has achieved its objectives. Participatory observation is conducted by individuals directly involved in the implementation of the action. This process can be carried out using observation guides such as field notes, daily journals, observations of classroom activities, descriptions of interactions in learning, electronic recording devices, or classroom mapping. Typically, observations are conducted using a format or form that has been prepared and contains a number of items related to events or behaviors that are expected to occur. This method aims to obtain data on student and teacher activities (as researchers) during the learning process using the cooperative jigsaw method approach for class X at MAN 1 OKI.

3. Documentation

Documentation is a method used to obtain data from various written sources or documents, such as books, magazines, regulations, meeting minutes, diaries, and so on. From this definition, it can be concluded that the documentation method is a data collection technique by tracing documents or other written objects related to research, such as Lesson Plans (RPP), test or exam results, and learning activity reports. This method functions as a complement in collecting data related to the curriculum, competency standards, basic competencies in the syllabus, lesson plans, learning evaluation results, student work, student worksheets, and other learning plans.

The pretest learning outcome data can be seen in the table below:

Table 1. *Pretest Research Data*

No	Student Name	Intial Test Scores
1	Aditiya Riski Pratama	70
2	Alvian Akbarrino	68
3	Andita Rahmawati	72
4	Anisa Putri	66
5	Cytra Prafita Ningrum	69
6	Dirga Sava Anwar	71
7	Enjelita Tania	65
8	Muhammad Helmi Fatian	70
9	Muhammad Ibnu Sani	67
10	Novem Maulana	68
11	Revando Mahar Dika	72
12	Risza Indah Riana	69
13	Sella Ayu Ramadhanni	71
14	Uun Maesaroh	70
15	Wulan Agustina	73
16	Defa Pemana	68
17	Ahmad Fauzi	67
18	Ahmad Tajudin Munjar Ngali	69
19	Aisyah	70
20	Aslikatul Husna Masita	72
21	Iqbal Maulana	66
22	Ista Umayyah	68
23	Latifatul Khoiriyah	69
24	Lidya Karisma Wati	71
25	M. Ridho	70

The results of the students' initial tests can be presented through the frequency distribution below:

- Vulnerable value = biges data – smalelles data = 73 – 65 = 8
- Lots of classes = $1 + 3,3 \text{ Log } N = 1 + 3,3 \text{ Log } (25) = 5,61$ so (6)
- Class interval = range : lost of classes = : 6 = 1,3 so 1

Table 2. *Initial test frequency*

Interval	Frekuensi	Persentase
65 - 66	3	12%
67 - 68	6	24%
69 - 70	9	36%
71 - 72	6	24%
73 - 74	1	4%

Source : Document researchers, 2025

Based on the table and diagram of the initial test above, it can be explained that 3 students (12%) obtained a score of 65-66, 6 students (24%) obtained a score of 67-68, 9 students (36%) obtained a score of 69-70, 6 students (24%) obtained a score of 71-72, and 1 student (4%) obtained a score of 73-77.

The post-test learning outcome data can be seen in the table below:

Table 3. *Research posttest data*

No	Student Name	Final Test Scores
1	Aditiya Riski Pratama	78
2	Alvian Akbarrino	75
3	Andita Rahmawati	80
4	Anisa Putri	73
5	Cytra Prafita Ningrum	77
6	Dirga Sava Anwar	79
7	Enjelita Tania	74
8	Muhammad Helmi Fatian	76
9	Muhammad Ibnu Sani	74
10	Novem Maulana	76
11	Revando Mahar Dika	81
12	Riszah Indah Riana	75
13	Sella Ayu Ramadhanni	79
14	Uun Maesaroh	78
15	Wulan Agustina	81
16	Defa Pemana	74
17	Ahmad Fauzi	75
18	Ahmad Tajudin Munjar Ngali	77
19	Aisyah	79
20	Aslikatul Husna Masita	80
21	Iqbal Maulana	73
22	Ista Umayyah	76
23	Latifatul Khoiriyah	77
24	Lidya Karisma Wati	80
25	M. Ridho	78

- a) The results of the students' initial test can be presented through the frequency distribution below:
- b) Range = largest data - smallest data = 81 - 73 = 8
- c) Number of classes = $1 + 3.3 \text{ Log } N = 1 + 3.3 \text{ Log } (25) = 5.61$, so (6)
- d) Class interval = range : number of classes = 8 : 6 = 1.3, so 1

Table 4. *Final test frequensi*

Interval	Frekuensi	Persentase
73 - 74	5	20%
75 - 76	6	24%
77 - 78	6	24%
79 - 80	6	24%
81 - 82	2	8%

Source : Document researchers, 2025

Based on the table and diagram of the initial test above, it can be explained that 5 students (20%) obtained a score of 73-74, 6 students (24%) obtained a score of 75-76, 6 students (24%) obtained a score of 77-78, 6 students (24%) obtained a score of 79-80, and 2 students (8%) obtained a score of 81-82.

c. The data analysis techniques

The data analysis techniques that can be carried out in this research are the following steps:

1) Prerequisite Testing

Prerequisite testing in research is conducted by testing data normality and homogeneity.

2) Normality Test

Data normality is intended to test whether the data is normally distributed. Normality testing uses the Kolmogorov-Smirnov test in SPSS. A sig value greater than 0.05 indicates normal distribution. The data normality test in this study used the one-sample Kolmogorov-Smirnov test in SPSS 26, with the data considered normal if the sig value is > 0.05 . The test results can be seen in the table below:

Table 5. *Data Normality Information*

Data	Asymp Sig	α	Keterangan
Pretest	0.122	0,05	Normal
Posttest	0.147		Normal

(Source : Document researchers, 2025)

Based on the table above, it can be explained that the Asymp Sig value meets the greater requirements, namely $0.122 > 0.05$ and $0.137 > 0.05$, thus the data is normally distributed and can be continued with the variance homogeneity test.

3) Homogeneity Test

The data normality test in this study used the one-sample Kolmogorov-Smirnov test in SPSS 26. The data are considered normal if the Sig. value is > 0.05 . The test results can be seen in the table below:

Table 6. Data Normality Information

Data	Asymp Sig	α	Keterangan
Pretest	0.138	0,05	Normal
Posttest	0.196		Normal

(Source : Document researchers, 2025)

Based on the table above, it can be explained that the Asymp Sig value meets the greater requirements, namely $0.138 > 0.05$ and $0.196 > 0.05$, thus the data is normally distributed and can be continued with the variance homogeneity test.

4) Hypothesis Testing

The data analysis conducted in this study employed an experimental method, using pre-tests and post-tests with an independent sample t-test using SPSS, with $df = N-1$ at a significance level of 5%. The following explains the manual t-test formula. (Arikunto, 2013)

Information :

t = The calculated t-test value, hereinafter referred to as the t-test.

Md = The mean or average of the difference between the pre-test and post-test.

xd = Deviation of each subject ($d-Md$).

xd = Sum of squared deviations.

N = Subjects in the sample.

$d.b$ = Determined by $N-1$.

The difference test before and after treatment was given was intended to determine the effect of the jigsaw cooperative learning model on the athletic learning outcomes of fifth-grade students at SD N 68 Palembang. The test used a paired sample t-test SPSS 25 with the provision that H_a is accepted if t count $>$ t table at $\alpha 0.05$ $DF = N-1$, (Riwidikdo, 2010, hal. 91). The test results can be seen in the table below:

Table 7. *Different test*

Data	\bar{X}	Sig	α	t_{hit}	t_{tab}	information
Pretest	72,12	0,001	0,05	2,743	1,7171	There is influence
Posttest	83,32					

(Source : Document researchers, 2025)

Decision Determination:

- 1) H_a is accepted if the calculated t value > t table
- 2) The calculated t value is 3.308
- 3) The t table value at α 0.05 ($Df = N-1 = 25-1 = 24$) is 1.7171
- 4) The conclusion is that there is an effect of the jigsaw learning model on the sprinting achievement of class X students at MAN 1 OKI, because the calculated t value > t table ($3.308 > 1.7171$).

d) Hypothesis Testing Criteria

Hypothesis testing provides possible outcomes. If the calculated t-test statistic is less than the t-table value at a 5% significance level, the working hypothesis (H_a) is rejected. If the calculated statistic is greater than or equal to the t-table value at a 5% significance level, the working hypothesis (H_a) is accepted. Or more clearly, if :

H_a

accepted :

There was a significant effect of the jigsaw cooperative method on improving students' sprint learning outcomes at MAN 1 OKI because the t-test was <t-table.

H_o

accepted :

There was no significant effect of the jigsaw cooperative method on improving students' sprint learning outcomes at MAN 1 OKI because the t-test was <t-table

4. CONCLUSION

Based on the results of the research conducted at MAN 1 Ogan Komering Ilir, it can be concluded that the implementation of the Jigsaw-type cooperative learning model has a positive effect on improving students' sprint learning outcomes. Prior to the implementation of the model, the average score of students' initial test results was 68.8, with only 12 students achieving scores above the Minimum Mastery Criteria (KKM) of 70, while 13 students were still below the standard.

After the application of the Jigsaw cooperative learning model during the learning process, there was a significant improvement in student learning outcomes. The percentage of students who achieved scores above the KKM increased substantially, reaching 100% after the treatment. This indicates that the Jigsaw learning model effectively enhances students' understanding, participation, and responsibility in the learning process.

Therefore, it can be concluded that the use of the Jigsaw cooperative learning model is effective and appropriate for improving students' sprint learning outcomes at MAN 1 OKI. The model encourages active participation, collaborative learning, and better comprehension of the material, making it a suitable strategy for teachers to improve the quality of learning in physical education subjects.

5. ACKNOWLEDGEMENT

The author expresses gratitude to Allah SWT for His grace and guidance so that this research entitled "The Effect of the Jigsaw Type Cooperative Learning Model in Improving Sprint Learning Outcomes at MAN 1 OKI" can be completed. The author would like to thank the principal, teachers, and staff of MAN 1 OKI for their permission and support during the research process. Appreciation is also extended to the students of MAN 1 OKI who participated as respondents in this study. The author is also grateful to the supervisors and examiners for their guidance and valuable suggestions. Finally, sincere thanks are given to colleagues and family for their encouragement, prayers, and support throughout the research process. The author realizes that this research still has limitations, but it is hoped that the results will be useful in improving student learning outcomes at MAN 1 OKI.

6. REFERENCES

- Agustina, E., & Maisura. (2025). Application of the Jigsaw cooperative learning model to improve learning outcomes. *Indonesian Literacy Journal*, 242–251. <https://doi.org/10.63822/j9w9c110>
- Anisah, A., & Azizah, E. N. (2016). The effect of using textbooks and the internet as learning resources on student learning outcomes in social studies (quasi-experiment in grade VII at SMP Negeri 1 Palimanan, Cirebon Regency). *Jurnal Logika*, 18(3), 1–18. <http://jurnal.unswagati.ac.id/index.php/logika/article/viewFile/215/138>
- Damayanti, U. (2020). The effect of the Jigsaw cooperative learning model on mathematics learning outcomes of fifth-grade students at SD Negeri 2 Banarjoyo. *Jurnal Pendidikan Guru Madrasah Ibtidaiyah*, 1(3), 1–125.
- Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and self-determination of behavior. *Psychological Inquiry*.
- Dewi, R. K., & Wardani, K. W. (2020). The effect of the picture and picture learning model in terms of elementary school students' critical thinking skills. *Jurnal Basicedu*, 4(4), 1066–1073. <https://doi.org/10.31004/basicedu.v4i4.511>

- Djonomiarjo, T., & Kab Pohuwato, P. (2018). The effect of the problem-based learning model on learning outcomes. *Aksara Journal of Non-Formal Education*, 5, 39–46. <http://ejournal.pps.ung.ac.id/index.php/AKSARA/index>
- Fadjarajani, S., Rosali, E. S., & Noerdianasari, W. (2020). The effect of the picture and picture learning model on geography learning outcomes. *Perspektif Ilmu Pendidikan*, 34(1), 19–28. <https://doi.org/10.21009/pip.341.3>
- Halean, S., Kandowangko, N., & Goni, S. Y. V. I. (2021). [Article title unavailable]. *Holistik Journal*, 14(2), 1–17. <https://ejournal.unsrat.ac.id/index.php/holistik/article/download/34453/32350>
- Hamzah, I., Ginanjar, A., & Setiawan, A. (2019). The effect of the Jigsaw learning model on volleyball underhand passing learning outcomes. *Journal of Physical Education and Sports*, 3(1), 58–63.
- Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Routledge.
- Indy, R. (2019). The role of education in the process of social change in Tumulung Village, Kauditan District, North Minahasa Regency. *Holistik: Journal of Social and Culture*, 12(4), 1–18. <https://ejournal.unsrat.ac.id/index.php/holistik/article/view/25466>
- Kahar, M. S., Anwar, Z., & Murpri, D. K. (2020). The effect of Jigsaw type cooperative learning model on improving learning outcomes. [*Journal Name*], 9(2), 279–295.
- Lauh, W. D. A. (2014). The dimension of educational sports in the implementation of physical education and health in schools. *Journal of Sports Education*, 3(1), 83–93.
- Lestari, A. (2019). The effect of rewards and punishments on student learning motivation at Iqra' 2 Integrated Islamic Elementary School, Bengkulu City. *An-Nizom*, 4(1), 12–19.
- Prihatiningsih, E., & Setyanigtyas, E. W. (2018). The effect of implementing the picture and picture learning model and the make a match model on student learning outcomes. *Journal of Elementary School Education*, 4(1), 1–10. <https://doi.org/10.30870/jpsd.v4i1.1441>
- Putri, R. Y., Fitri, R., & Fuadiyah, S. (2024). The effect of the Jigsaw learning model on student learning outcomes in the biology education study program, Padang State University. [*Journal Name*], 8, 3951–3954.
- Rahmadania, S., Sitika, A. J., & Darmayanti, A. (2021). The role of Islamic religious education in families and communities. *Edumaspul: Journal of Education*, 5(2), 221–226. <https://doi.org/10.33487/edumaspul.v5i2.1978>
- Saragih, M. (2020). The effect of interpersonal communication on improving employee performance at the Pematangsiantar Highways and Irrigation Department. *AccuUsi Scientific Journal*, 2(1), 49–58. <https://doi.org/10.36985/accusi.v2i1.52>

Simamora, T., Harapan, E., & Kesumawati, N. (2020). Determinant factors affecting student learning achievement. *JMKSP (Journal of Management, Leadership, and Educational Supervision)*, 5(2), 191–200. <https://doi.org/10.31851/jmksp.v5i2.3770>

Slavin, R. (2015). *Cooperative learning: Theory, research, and practice*. Allyn & Bacon.

Sujana, I. W. C. (2019). Functions and objectives of Indonesian education. *Adi Widya: Journal of Elementary Education*, 4(1), 29–36. <https://doi.org/10.25078/aw.v4i1.927>

Sulhan, S. (2020). Using the Jigsaw cooperative learning model to improve social studies learning outcomes in social, cultural, economic, ethnic, and religious diversity. *Journal of Educational Action Research*, 4(1), 52–60. <https://doi.org/10.23887/jear.v4i1.23661>

Syafruddin, M. A., Jahrir, A. S., Yusuf, A., Ikadarny, & Yusuf, A. (2022). The role of physical education and sports in building national character. *STOK Bina Guna Medan Scientific Journal*, 10(2), 73–83.

Taqwim, R. I., Winarno, M. E., & Roesdiyanto, R. (2020). Implementation of physical education, sports, and health learning. *Journal of Education: Theory, Research, and Development*, 5(3), 395–402. <https://doi.org/10.17977/jptpp.v5i3.13303>

Thenu, P., Hasbullah, B., & Hattu, M. (2023). Improving shooting learning outcomes in soccer games through the team assisted individualization learning model. *EDUKASIA: Journal of Education and Learning*, 4(1), 277–282.

Wuriasih, D. N., Haryadi, H., & Jaryono, J. (2019). The effect of the Jigsaw cooperative learning model on grade VIII social studies learning outcomes. *Soedirman Economics Education Journal*, 1(1), 18–27. <https://doi.org/10.32424/seej.v1i1.1879>

Yuwanita, I., Dewi, H. I., & Wicaksono, D. (2020). The influence of learning methods and learning styles on science learning outcomes. *Instruksional*, 1(2), 152–158. <https://doi.org/10.24853/instruksional.1.2.152-158>

Atmojo, R. S., Herawati, Z. R., Aunillah, J. T., Yudiyani, I., Yasin, D. M., & M. (2023). Analysis of the Jigsaw cooperative model in improving student learning outcomes in social studies. *Journal of Elementary Education and Social Humanities*, 3(1), 2588–2593.

Guru, P., Pembelajaran, D., & Berkebutuhan, A. (2025). The role of teachers in learning for children with special needs in grade 1 of SDN 74 Palembang. *[Journal Name]*, 10(September).

Tradisional, P., Kelas, D. I., & Prabumulih, S. D. N. (2025). [Article title unavailable]. 6, 1156–1167.

Metzler, M. W. (2017). *Instructional models for physical education* (3rd ed.). Routledge.

Griffin, L., & Butler, J. (2005). *Teaching games for understanding: Theory, research, and practice*. Human Kinetics.

Mitchell, S., Oslin, J., & Griffin, L. (2013). *Teaching sport concepts and skills: A tactical games approach* (3rd ed.). Human Kinetics.

Standage, M., Duda, J., & Ntoumanis, N. (2005). A test of self-determination theory in school physical education. *British Journal of Educational Psychology*.

Kirk, D. (2010). *Physical education futures*. Routledge.