



Is Scientific Learning Better Than Conventional Learning on Creativity and Student Learning Outcomes?

Albadi Sinulingga^{*a,b,c,d,e}, Sabaruddin Yunis Bangun^{a,b,c,d,e}, Wicaksono^{a,b,c,d,e}

¹fakultas Ilmu Keolahragaan, Universitas Negeri Medan, Jl. Willem Iskandar / Pasar V, Medan, Sumatera Utara, 20221, Indonesia

e-mail: badisling@hotmail.com, unisbgn@unimed.ac.id, wicak123456789@gmail.com

Abstract

This study aims to identify and describe the Comparison of the Effects of Scientific and Conventional Learning on the Creativity and Learning Outcomes of Physical Education Students in Class XI SMA in Kota Kisaran, Kab. Asahan T.A 2017/2018. This study was an experiment using test instrument techniques for learning outcomes and questionnaires for creativity, with the ANOVA 2 x 2 research design. A total of 138 students were sampled using cluster random sampling sampling technique. Before carrying out a two-way analysis of variance at a significance level of α of 0.05, first perform the analysis requirements, namely the normality and homogeneity tests, followed by the Scheffe test at a significance level of $\alpha = 0.05$. Research results indicate that the process of applying scientific learning is better in achieving physical education learning outcomes compared to the application of conventional learning.

Keywords: Learning, Creativity, Learning Outcomes

corresponding author: badisling@hotmail.com

Artikel Info:

Submitted: 16/01/2023

Revised: 17/01/2023

Accepted: 07/02/2023

Published: 17/05/2023

How to Cite: Sinulingga, A., Bangun, S, Y., Wicaksono. (2023). Is Scientific Learning Better Than Conventional Learning on Creativity and Student Learning Outcomes?. *Journal Coaching Education Sport*, 4(1), 45-58. <https://doi.org/10.31599/jces.v4i1.1903>

Author's Contribution: a) Research Design; b) Data Collection; c) Statistical Analysis; d) Manuscript Preparation; e) Fund



Journal Coaching Education Sports is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/).

A. Introduction

In the 21st-century learning era, the progress and prosperity of a nation highly depend on the quality of its Human Resources (Jalaludin, 2012; Krismiyati, 2017). Based on the aforementioned, it is crucial for every country to seriously pay attention to efforts in enhancing human resources through improved education quality. Education is an integral part that cannot be separated from the development process itself (Inanna, 2018; Nurgiyantoro, 2010; Rahmat, 2016).

The human resources required in the current 21st century are those who possess the 4C characteristics, namely creativity and innovation, collaboration, communication, and critical thinking and problem-solving (Wijaya et al., 2016, p. 21). One of the characteristics that teachers need to have in educating students is high creativity. In the 21st century, teachers must be creative and able to integrate the use of information and communication technology, particularly computers, in the teaching and learning process. By having such creativity, teachers will be able to guide students in applying these characteristics.

Student creativity is of utmost importance in the learning objectives, prompting the government to give special attention by revising the education curriculum to focus on student engagement.

However, its implementation in schools is still concerning (Handayani, Peny Husna & Gandamana, 2017; Rasmini, 2017). Learning tends to be conventional, with a focus on the teacher, hindering the growth and development of student creativity (Hasanah, 2019; N. Wibowo, 2016; Zulyadaini, 2016). A concrete example is the evaluation system that excessively emphasizes right and wrong answers without considering the reasoning behind the answers, where students are only expected to provide correct answers without explaining the reasons and opinions behind their answers (Dewi, 2018; Kristanti & Umamah, 2019).

Efforts have been made by the government to innovate in the field of education, one of which is curriculum improvement. The curriculum acts as a vessel that determines the direction of education (Fadlillah, 2017; Paminto et al., 2018). The success of education depends greatly on the curriculum used (Khuzaimah, 2017). In the education process, the curriculum is the most important element in nurturing competent, creative, innovative individuals who are responsible (Hamdan, 2019). Based on the aforementioned, the curriculum serves as the core of education, necessitating its improvement to align with the needs and developments of the times.

Currently, there are two curriculum

models used at the Senior High School level, namely the 2013 curriculum and the 2006 School-Based Curriculum (KTSP). The 2013 curriculum is synonymous with scientific learning. Scientific learning is believed to be a bridge to the development of affective, psychomotor, and cognitive aspects of students, aiming for more productive, creative, innovative, affective, and enthusiastic learners (Ghozali, 2017; Raharjo, 2015).

Another effort undertaken by the government to enhance the quality of education is the formulation and implementation of the 4.0 education revolution, which involves a shift from a manual education system to an era of industry, digital technology, and innovation in education (Kristanti & Umamah, 2019; Wirawan, 2020). To achieve this, the utilization of digital technology in the teaching and learning process is necessary. This way, the transfer of knowledge and technology can occur continuously without the need for face-to-face interaction in the classroom. In other words, learning materials can be delivered to students at any time without limitations of space and time.

In the context of the situation observed in SMA Negeri 1, SMA Negeri 2, SMA Negeri 3, and SMA Negeri 4 Kisaran, all of which use the 2013 curriculum, as well as

in SMA Swasta Muhamadiyah, SMA Swasta Diponegoro, SMA Swasta Panti Budaya, and SMA Swasta Tamansiswa Kisaran, which use the KTSP 2006 curriculum, the researcher is interested in conducting an experiment in both public and private high schools in the city of Kisaran, Asahan Regency. The aim is to observe the difference in the effects of conventional teaching, focusing on the teacher, using the KTSP 2006 curriculum, and the implementation of scientific-based learning, focusing on students, using the 2013 curriculum on student creativity and learning outcomes in the field of Physical Education in Grade XI of the 2017/2018 academic year.

B. Methods

This research aims to examine the comparison of the effects of scientific-based and conventional teaching on student creativity and learning outcomes. Based on the research objectives, this study adopts a quantitative experimental design approach using a 2 X 2 factorial design (Raja & Khan, 2018). With this design, the impact of implementing conventional teaching and scientific-based teaching on creativity and learning outcomes in Physical Education will be compared, as described in the following table:

Table 1. 2x2 Factorial ANOVA Design

Effect (B)	Learning Group (A)	
	Conventional (A1)	Scientific (A2)
Creativity (B1)	A1B1	A2B1
Learning Outcomes (B2)	A1B2	A2B2

All students in Grade XI of both public and private high schools in the city of Kisaran, Asahan Regency, were included in the research location. The population of this study consisted of all Grade XI students in the Science/Social Sciences Department of both public and private high schools in the city of Kisaran, Asahan Regency, for the 2017/2018 academic year, totaling 1491 students.

To determine the sample size, four (4) public schools that use the 2013 curriculum, representing the scientific-

based teaching group, and four (4) private schools that use the KTSP 2006 curriculum, representing the conventional teaching group, were selected. Since all these schools are located in the Kisaran area, the researcher decided to take only two (2) samples from each group that were considered to represent the entire population. The grouping, as well as the learning outcomes and Minimum Criteria of Mastery (KKM) for each school obtained in the odd semester of 2017/2018, are presented in the following table:

Table 2. Minimum Mastery Criteria (KKM) of Each School

Scientific Learning				Conventional Learning			
School name	Treatment Class	The number of students	KKM	School name	Treatment Class	The number of students	KKM
SMA Negeri 1 Kisaran	XI MIA 1	36	80	SMA Swasta Muhamadiyah	XI IPA 2	32	70
SMA Negeri 2 Kisaran	XI IPA 5	35	80	SMA Swasta Taman siswa	XI IPS	27	75
The number of students		71		The number of students		57	

The data collection technique in this research study involves using test items with indicators of observing, questioning,

gathering information, associating, and communicating, as well as observation and learning outcome questionnaires (Nauman

& Hussain, 2017). The learning outcome test is used to assess learning progress and consists of subjective essay-type test techniques with indicators of observing, questioning, gathering information, associating, and communicating to gather data on cognitive learning outcomes in Physical Education. Observation and documentation methods are employed for psychomotor skills in practical exercises, while portfolios are used to evaluate attitude in the learning process. The analysis used is two-way ANOVA, where before conducting the analysis of variance (ANOVA), the analysis requirements are tested, namely (1) normality test, and (2) homogeneity test (Sadeghi et al., 2014).

C. Result and Discussion

Result

After participating in a series of programmed scientific-based learning processes, divided into two groups: a group of students taught with scientific-based teaching and a group taught with conventional teaching, data on creativity and learning outcomes in the form of scores were obtained and analyzed for their means. Subsequently, descriptive data calculations were conducted for each variable using the obtained data. The calculations were performed using SPSS 26.

Table 3. Descriptive Data of Conventional Teaching and Scientific-Based Teaching on Creativity

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Scientific	69	157.41	16.526	1.989	153.44	161.38	105	196
Conventional	59	156.47	14.812	1.928	152.61	160.33	105	192
Total	128	156.98	15.705	1.388	154.23	159.72	105	196

Based on the descriptive output above, it can be observed that the creativity of scientific-based teaching had a sample size (n) of 69, with a standard deviation (SD) of 16.526 and an average creativity score of 157.4. On the other hand, for conventional teaching, the sample size was

59, with a standard deviation of 14.812 and an average creativity score of 156.47. From these data, it can be concluded that the creativity in scientific-based teaching is superior to that of conventional teaching. The histogram provides an interval data overview as follows:

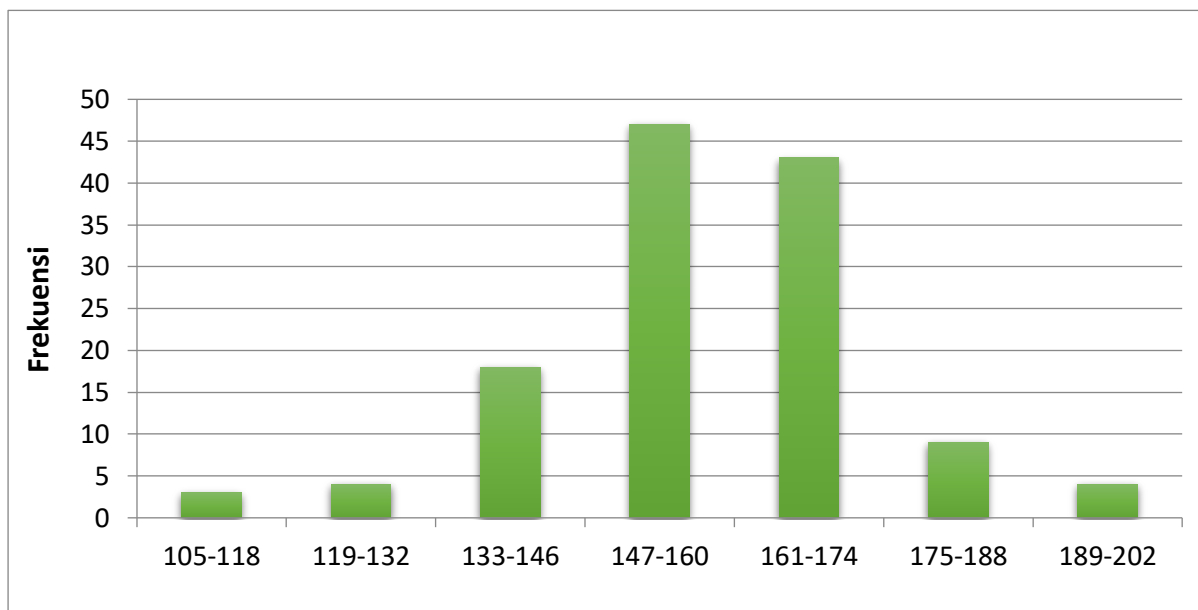


Figure 1. Frequency Graph of Conventional Teaching and Scientific-Based Teaching on Creativity

Table 4. Descriptive Data of Conventional Teaching and Scientific-Based Teaching on Physical Education Learning Outcomes.

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Scientific	69	157.58	12.139	1.461	154.66	160.50	128	199
Conventional	59	153.59	16.468	2.144	149.30	157.88	117	181
Total	128	155.74	14.379	1.271	153.23	158.26	117	199

From the above descriptive output, it can be observed that the learning outcomes of scientific-based teaching had a sample size (n) of 69, with a standard deviation (SD) of 12.139 and an average learning outcome score of 157.58. On the other hand, for conventional teaching, the sample size was 59, with a standard

deviation of 16.468 and an average learning outcome score of 153.59. Based on these data, it can be concluded that the learning outcomes in scientific-based teaching are superior to those in conventional teaching. The histogram provides an interval data overview as follows:

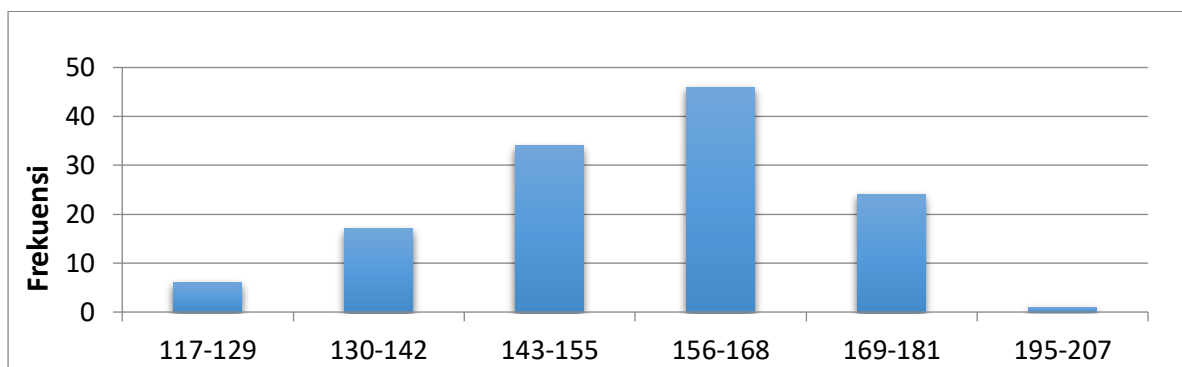


Figure 2. Frequency Graph of Conventional Teaching and Scientific-Based Teaching on Physical Education Learning Outcomes.

Table 5. Mean Comparison

EFFECT	LEARNING GROUP		Total AVERAGE
	SCIENTIFIC (A1)	CONVENTIONAL (A2)	
Creativity (B1)	157,41	156,47	313,88
Learning Outcomes (B2)	156,47	153,59	311,17
Total Average	314,99	310,06	625,05
Treatment Average	157,50	155,03	156,26

Based on the data in Table 5 above, it can be concluded that: a) For the row factor, which is the impact variable, the null hypothesis (H0) is rejected and the alternative hypothesis (Ha) is accepted, indicating that there is an influence between creativity and physical education learning outcomes, b) For the column factor, which is the teaching group variable, the null hypothesis (H0) is rejected and the alternative hypothesis (Ha) is accepted, indicating that there is an influence

between the scientific-based teaching group and the conventional teaching group, c) For the interaction between the column and row factors, or the third hypothesis, the null hypothesis (H0) is rejected and the alternative hypothesis (Ha) is accepted, indicating that there is an interaction between the scientific-based teaching group and the conventional teaching group on creativity and physical education learning outcomes.

Table 6. Descriptive Statistics of Duncan's Test

Group	Effect	Mean	Std. Deviation	N
SMA N 1 KIS	Creativity	156.61	19.513	36
	Learning Outcomes	155.03	13.712	36
	Total	155.82	16.764	72
SMA N 2 KIS	Creativity	158.27	12.743	33
	Learning Outcomes	160.36	9.601	33
	Total	159.32	11.244	66
SMA SWASTA TAMSIS	Creativity	156.00	12.558	27
	Learning Outcomes	153.15	14.325	27
	Total	154.57	13.420	54
SMA SWASTA MUHAMMADIYAH	Creativity	159.53	13.725	32
	Learning Outcomes	153.97	18.303	32
	Total	156.75	16.291	64
Total	Creativity	157.64	15.033	128
	Learning Outcomes	155.74	14.379	128
	Total	156.69	14.711	256

For SMA Negeri 1 Kisaran group, the creativity score has a mean of 156.61 and SD = 19.513, while the Physical Education learning outcomes have a mean of 155.03 and SD = 13.71 with n = 36. As for SMA N 2 Kisaran group, the creativity score has a mean of 158.27 and SD = 12.743, and the Physical Education learning outcomes have a mean of 169.36 and SD = 9.601 with n = 33. Furthermore, for SMA Swasta Taman siswa Kisaran group, the creativity score has a mean of 156.00 and SD = 12.558, and the Physical Education learning outcomes have a mean of 153.15 and SD = 14.325 with n = 27. Lastly, for SMA Swasta Muhammadiyah Kisaran group, the creativity score has a mean of 159.53 and SD = 13.725. The Physical Education learning outcomes have a mean of 155.74 and SD = 14.379

with n = 32.

Discussion

Differences in the Effect of Applying Conventional Learning and Scientific Learning on Creativity

The analysis of the data concluded that there is a difference between the application of scientific learning and conventional learning in terms of creativity, where the application of scientific learning is superior to conventional learning. Other research findings also state that the scientific approach has a better impact on students' critical thinking compared to the conventional approach (Bagiasa, 2016). Based on these findings, H_a is accepted, and H_o is rejected.

Conventional learning is characterized as a learning process where the material taught is expected to be

reproduced, often referred to as teacher-centered learning (Cahyadi et al., 2021; F. P. A. Wibowo et al., 2022).

On the other hand, scientific learning is a student-centered approach that stimulates students to actively develop, discover, and investigate problems or questions given by the teacher, resulting in meaningful outcomes. In other words, students are placed at the center of the learning process. This activity aims to conclude the learning process by solidifying students' knowledge through guiding and providing feedback on the learning process (Sani, 2014; Yuliyanto et al., 2018). Therefore, the application of scientific learning is better than conventional learning in fostering students' creativity.

Differences in the Effect of Applying Conventional Learning and Scientific Learning on Physical Education Learning Outcomes

Based on the data analysis, there is a difference in the impact of conventional learning and scientific learning on creativity and the learning outcomes of Physical Education. The average learning outcome score in scientific learning is higher than that in conventional learning. This finding is consistent with studies conducted by (Fatmawati et al., 2018; Irawan et al., 2018; Rahmani, 2016), which showed that students' learning outcomes are higher in scientific learning compared to

conventional learning.

Scientific learning encourages students to seek information on their own. They don't just rely on the teacher for information but can gather information from various sources. This makes students more active and independent in their learning. This aligns with the views of (Fadilah, 2014; Hargiyantoro et al., 2015), stating that participants in scientific learning acquire knowledge through their own senses and reasoning, experiencing the process of acquiring knowledge firsthand. On the other hand, in conventional learning, students tend to be passive listeners. They only listen to the teacher's delivery and take notes on what they consider important. Learning is centered around the teacher, and students are not encouraged to identify and solve problems, resulting in boring learning experiences.

Based on the explanations above, it can be concluded that the implementation of conventional learning and scientific learning shows an improvement in students' learning outcomes in Physical Education. Scientific learning proves to be more effective than conventional learning in enhancing students' learning outcomes in Physical Education.

Differences in the Effect of Applying Conventional Learning and Scientific Learning on Creativity and Physical Education Learning Outcomes

The data analysis reveals a difference between the application of conventional learning and scientific learning in terms of creativity and learning outcomes in Physical Education. The implementation of scientific learning proves to be superior to conventional learning. Based on the aforementioned findings, it can be concluded that scientific learning is more effective compared to conventional learning. In conventional learning, students merely listen to the teacher's explanations, resulting in superficial understanding of the material that is often forgotten quickly. On the other hand, in scientific learning, the teacher acts as a facilitator while students actively engage in individual or group activities to understand, explore, and solve problems. The curiosity to solve problems fosters students' creativity. As a result, this concept becomes ingrained and not merely memorized, leading to improved learning outcomes for students (Katimo et al., 2016).

Interaction of the Effect of Applying Conventional Learning and Scientific Learning on Creativity and Physical Education Learning Outcomes

According to the results of the data analysis conducted, the findings of this study indicate an interaction between the implementation of scientific learning and conventional learning in relation to

creativity and learning outcomes in Physical Education. Furthermore, the null hypothesis (H_0) was rejected, and the alternative hypothesis (H_a) was accepted. It can be concluded that there is an interaction between the implementation of scientific learning and conventional learning in influencing students' creativity and learning outcomes. This research demonstrates that the use of appropriate learning methods supported by good creativity can lead to better learning outcomes for students. In this type of learning, students have more freedom to develop themselves, discover new knowledge, and collaborate with their peers. Additionally, when students possess good creativity, they tend to achieve better learning outcomes and are more motivated and challenged by new things (Oktiani, 2017). Therefore, with the right implementation of learning methods and supported by good creativity, students can enhance their learning outcomes.

However, these findings are not consistent with the results of another study (Katimo et al., 2016) that stated, "there is no interaction between scientific learning and demonstration methods in terms of students' academic achievement and creativity." The study explained that the absence of interaction was due to the uneven distribution of academic achievement and creativity among students with high and low attitudes. Nonetheless, in

the present study, the implementation of both conventional learning and scientific learning was found to enhance students' creativity and learning outcomes in Physical Education, indicating an interaction between the two approaches. This interaction is attributed to the unequal average values found in the data analysis.

D. Conclusion

The results of this study indicate the following: 1) There is a difference in the influence of learning on creativity and learning outcomes, and 2) There is an interaction between the influence of learning on creativity and learning outcomes in Physical Education. The findings of this research suggest that the implementation of scientific learning is more effective in achieving learning outcomes in Physical Education compared to conventional learning approaches.

E. Acknowledgment

Thank you to Universitas Negeri Medan and all the research participants who assisted the researchers in completing this study.

F. Conflict of Interest

No conflict of interest

Reference

Bagiasa, I. K. (2016). Pendekatan Saintifik Untuk Meningkatkan Hasil belajar Kebugaran Jasmani Pada Siswa

Kelas VIII A1 SMP Negeri 3 Sawan. *JEPUN: Jurnal Pendidikan Universitas Dhyana Pura*, 1(2), 159–171.

Cahyadi, A., Hendryadi, Widyastuti, S., Mufidah, V. N., & Achmadi. (2021). Emergency remote teaching evaluation of the higher education in Indonesia. *Heliyon*, 7(8), e07788. <https://doi.org/10.1016/j.heliyon.2021.e07788>

Dewi, E. R. (2018). Metode Pembelajaran Modern Dan Konvensional Pada Sekolah Menengah Atas. *PEMBELAJAR: Jurnal Ilmu Pendidikan, Keguruan, Dan Pembelajaran*, 2(1), 44. <https://doi.org/10.26858/pembelajaran.v2i1.5442>

Fadilah. (2014). *Implementasi Kurikulum 2013 Dalam Pembelajaran SD/MTs dan SMA*. Ar-Ruzz.

Fadlillah, M. (2017). Model kurikulum pendidikan multikultural di taman kanak-kanak. *Jurnal Pembangunan Pendidikan: Fondasi Dan Aplikasi*, 5(1), 42. <https://doi.org/10.21831/jppfa.v5i1.13286>

Fatmawati, L., Sukidin, S., & Suyadi, B. (2018). PERBEDAAN HASIL BELAJAR SISWA MELALUI PENDEKATAN KONVENSIONAL DENGAN PENDEKATAN SAINTIFIK PADA KOMPETENSI DASAR FUNGSI MANAJEMEN SISWA KELAS X DI SMA NEGERI 4 JEMBER TAHUN AJARAN 2016/2017. *JURNAL PENDIDIKAN EKONOMI: Jurnal Ilmiah Ilmu Pendidikan, Ilmu Ekonomi Dan Ilmu Sosial*, 11(2), 134. <https://doi.org/10.19184/jpe.v11i2.6460>

Ghozali, I. (2017). Pendekatan Scientifi Learning Dalam Meningkatkan Prestasi Belajar Siswa. *Pedagogik: Jurnal Pendidikan*, 4(1), 1–13.

- <https://doi.org/10.33650/pjp.v4i1.5>
Hamdan, H. (2019). Model Pengembangan Kreativitas dan Inovasi dalam Membentuk Entrepreneur di Era Ekonomi Digital. *JURNAL MANAJEMEN DAN KEWIRAUSAHAAN*, 7(1), 59. <https://doi.org/10.26905/jmdk.v7i1.2548>
- Handayani, Peny Husna, & Gandamana, A. (2017). Pengembangan Kreativitas Anak Usia Dini Dalam Keluarga. *Jurnal Keluarga Sejahtera*, 15(2), 46–56. <https://doi.org/10.24114/jkss.v15i2.8774>
- Hargiyantoro, D., Rosnita, & Kartono. (2015). Pengaruh Pendekatan Saintifik Terhadap Hasil Belajar IPA Siswa Kelas V SDN 16 Potianak Selatan. *Jurnal Pendidikan Dan Pembelajaran Khatulistiwa*, 4(3), 1–13. <https://doi.org/10.26418/jppk.v4i3.9353>
- Hasanah, S. U. (2019). Studi Komparasi Penerapan Metode Active Learning Model Reading Aloud Dan Metode Konvensional Model Ceramah Dalam Pembelajaran Bahasa Arab Dan Pengaruhnya Terhadap Respon Siswa Kelas V Mi Ma'arif 01 Pahonjean Majenang. *Jurnal Tawadhu*, 3(1), 804–822.
- Inanna, I. (2018). PERAN PENDIDIKAN DALAM MEMBANGUN KARAKTER BANGSA YANG BERMORAL. *JEKPEND: Jurnal Ekonomi Dan Pendidikan*, 1(1), 27. <https://doi.org/10.26858/jekpend.v1i1.5057>
- Irawan, T. H., Sugiarti, T., & Agustiningsih, A. (2018). Pengaruh Pendekatan Saintifik Terhadap Hasil Belajar Pokok Bahasan Persegi, Persegi Panjang dan Segitiga Pada Siswa Kelas III SDN Kebonsari 04 Jember. *Jurnal Edukasi*, 5(1), 27. <https://doi.org/10.19184/jukasi.v5i1.8014>
- Jalaludin. (2012). Membangun SDM Bangsa Melalui Pendidikan Karakter. *Jurnal Penelitian Pendidikan*, 13(2), 1–14.
- Katimo, Suparmi, & Sukarmin. (2016). Pengaruh Pembelajaran Dengan Pendekatan Saintifik Menggunakan Metode Eksperimen Dan Demonstrasi Terhadap Prestasi Belajar Dan Kreativitas Ditinjau Dari Sikap Ilmiah. *Inkuiri: Jurnal Pendidikan IPA*, 5(2), 87–93. <https://doi.org/10.20961/inkuiri.v5i2.9482>
- Khuzaimah, K. (2017). Paradigma Pengembangan Kurikulum Pendidikan Agama Islam di Sekolah (Analisis berbagai Kritik terhadap PAI). *Jurnal Kependidikan*, 5(1), 105–118. <https://doi.org/10.24090/jk.v5i1.1256>
- Krismiati, K. (2017). Pengembangan Sumber Daya Manusia dalam Meningkatkan Kualitas Pendidikan di SD Negeri Inpres Angkasa Biak. *Jurnal Office*, 3(1), 43. <https://doi.org/10.26858/jo.v3i1.3459>
- Kristanti, I., & Umamah, N. (2019). The Character-Based Modules And Their Influence Onhistorical Awareness Of Students Of Class XI MIPA 4 SMAN Pasirian. *Jurnal Historica*, 3(1), 78–89.
- Nauman, S., & Hussain, N. (2017). Provision of human capital by business schools of Pakistan: A need for the sustainability of the Pakistani banking sector. *Journal of Education for Business*, 92(1), 44–52. <https://doi.org/10.1080/08832323.2016.1274712>
- Nurgiyantoro, B. (2010). SASTRA ANAK DAN PEMBENTUKAN KARAKTER. *Jurnal Cakrawala Pendidikan*, 1(3). <https://doi.org/10.21831/cp.v1i3.23>

- Oktiani, I. (2017). Kreativitas Guru dalam Meningkatkan Motivasi Belajar Peserta Didik. *Jurnal Kependidikan*, 5(2), 216–232. <https://doi.org/10.24090/jk.v5i2.1939>
- Paminto, J., Rosiana, T., Budiyono, B., & Budisantoso, H. T. (2018). Implementasi Kurikulum 2013 di Sekolah Pesantren dengan Sistem Boarding School. *Indonesian Journal of Curriculum and Educational Technology Studies*, 6(1), 41–52. <https://doi.org/10.15294/ijcets.v6i1.15937>
- Raharjo, H. P. (2015). Penerapan Pendekatan Saintifik Dalam Membentuk Karakter Positif Anak. *Journal of Physical Education, Health and Sport. JPEHS*, 2(1), 28–32. <https://doi.org/10.15294/jpehs.v2i1.3939>
- Rahmani. (2016). Pengaruh Pendekatan Saintifik Terhadap Hasil Belajar Siswa Sekolah Dasar. *Jurnal Pendidikan Serambi Ilmu*, 17(2), 299–303. <https://doi.org/10.32672/si.v27i2.127>
- Rahmat, P. S. (2016). Peran Pendidikan Dalam Membentuk Generasi Berkarakter Pancasila. *Pedagogi: Jurnal Penelitian Pendidikan*, 3(2), 1–15. <https://doi.org/10.25134/pedagogi.v3i2.1161>
- Raja, F. U., & Khan, N. (2018). Comparing Traditional Teaching Method and Experiential Teaching Method using Experimental Research. *Journal of Education and Educational Development*, 5(2), 276. <https://doi.org/10.22555/joeeed.v5i2.1816>
- Rasmini, N. W. (2017). PEMBELAJARAN MENGGUNAKAN MEDIA SASTRA TRADISIONAL DALAM MENGEMBANGKAN NILAI PERSONAL ANAK USIA DINI. *JPUD - Jurnal Pendidikan Usia Dini*, 11(1), 31–48. <https://doi.org/10.21009/JPUD.111.03>
- Sadeghi, R., Sedaghat, M. M., & Sha Ahmadi, F. (2014). Comparison of the effect of lecture and blended teaching methods on students' learning and satisfaction. *Journal of Advances in Medical Education & Professionalism*, 2(4), 146–150.
- Sani, R. A. (2014). *Pembelajaran Saintifik Untuk Implementasi Kurikulum 2013*. Bumi Aksara.
- Wibowo, F. P. A., Novita, Yudhaprawira, A., Denatara, E. T., & Candra, J. (2022). Pengaruh Latihan Shadow Dan Shuttle Run Terhadap Footwork Olahraga Bulutangkis Usia 13—15 Tahun Pb Jaya Raya Jakarta. *Journal Coaching Education Sports*, 3(1), 57–68. <https://doi.org/10.31599/jces.v3i1.1056>
- Wibowo, N. (2016). UPAYA PENINGKATAN KEAKTIFAN SISWA MELALUI PEMBELAJARAN BERDASARKAN GAYA BELAJAR DI SMK NEGERI 1 SAPTOSARI. *Elinvo (Electronics, Informatics, and Vocational Education)*, 1(2), 128–139. <https://doi.org/10.21831/elinvo.v1i2.10621>
- Wijaya, E. Y., Sudjimat, D. A., & Nyoto, A. (2016). *Transformasi Pendidikan Abad 21 Sebagai Tuntutan Pengembangan Sumber Daya Manusia Di Era Global. 1*.
- Wirawan, V. (2020). Penerapan E-Government dalam Menyongsong Era Revolusi Industri 4.0 Kontemporer di Indonesia. *Jurnal Penegakan Hukum Dan Keadilan*, 1(1). <https://doi.org/10.18196/jphk.1101>

- Yuliyanto, A., Fadriyah, A., Yeli, K. P., & Wulandari, H. (2018). Pendekatan Saintifik Untuk Mengembangkan Karakter Disiplin Dan Tanggung Jawab Siswa Sekolah Dasar. *Metodik Didaktik*, 13(2). <https://doi.org/10.17509/md.v13i2.9307>
- Zulyadaini. (2016). Perbandingan Hasil Belajar Matematika Model Pembelajaran Kooperatif Tipe Coop-Coop Dengan Konvensional. *Jurnal Ilmiah Universitas Batanghari Jambi*, 16(1), 153–158. <https://doi.org/10.33087/jiubj.v16i1.96>