

The Influence of School Operational Management and Principal's Transformational Leadership on PCK (Pedagogical Content Knowledge) of Elementary School Teachers in Sail District

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ABSTRACT

This study aimed to analyze the influence of school operational management and transformational leadership of the principal on the Pedagogical Content Knowledge (PCK) of elementary school teachers in Sail District. PCK is a key element in teacher professionalism that reflects the ability to integrate pedagogical knowledge with open materials to create effective learning experiences. School operational management plays a role in creating a conducive environment for the development of teacher professionalism, while the transformational leadership of the principal provides inspiration, motivation, and support for improving teacher competence. This study uses a quantitative approach with multiple linear regression analysis methods. The results showed that school operational management had a significant effect on teacher PCK with a regression coefficient value of $\beta = 0.412$, $p < 0.05$. The transformational leadership of the principal also had a significant effect on teacher PCK with a value of $\beta = 0.378$, $p < 0.05$. Simultaneously, both variables contribute to teacher PCK with a determination coefficient value of $R^2 = 0.621$, indicating that 62.1% of teacher PCK variability can be explained by school operational management and principal transformational leadership. The implication of this study is the importance of strengthening the operational management system and principal transformational leadership in improving the quality of learning in elementary schools. Therefore, schools need to implement effective managerial strategies and visionary leadership to optimize teacher competence in teaching.

Keywords: *School operational management; principal transformational leadership; pedagogical content knowledge (PCK); elementary school teachers.*

INTRODUCTION

Pedagogical Content Knowledge (PCK) ability is a key element in a teacher's professionalism. Pedagogical Content Knowledge (PCK) is a combination of knowledge of material or discipline with an understanding of general pedagogy, thus forming a specific and unique knowledge structure in learning a particular field of science (Sarkim, 2015). This element not only functions as a basis for effective teaching, but also as an indicator of the quality of education in schools. Through Pedagogical Content Knowledge (PCK), teachers can deliver learning materials in a relevant, interesting, and contextual way, so that students not only understand the concept but are also able to apply it in everyday life. With this ability, teachers can help students develop critical, creative, and analytical thinking skills, which are very

important in the modern era. However, some teachers face challenges in implementing Pedagogical Content Knowledge (PCK) optimally, which often results in less varied teaching patterns.

This happens because of differences in the characteristics of teaching materials that require diverse teaching approaches and methods. This condition shows that teachers' mastery of Pedagogical Content Knowledge (PCK) still needs to be improved, especially in terms of understanding the material, using learning media, and applying it contextually (Setyoningsih & Hariyatmi, 2024). Elementary school teachers in Sail District also face similar challenges, especially in efforts to optimize the learning process to be more relevant to students' needs. Some teachers need additional support to develop learning plans that are in accordance with educational objectives, student characteristics, and effective use of technology. Other challenges include the use of innovative teaching methods, adjusting teaching to student needs, and integrating technology into the learning process. In addition, increasing communication and collaboration between teachers can be a strategic effort to support successful learning. By providing the right support, more interesting, contextual, and relevant learning can be realized, including through optimal use of educational technology as the main solution.

Therefore, school operational management has a strategic role in supporting the improvement of teachers' Pedagogical Content Knowledge (PCK). Operational management includes the implementation of various tasks managed by education personnel according to their responsibilities. These responsibilities include various aspects, such as curriculum management, workforce, finance, facilities and infrastructure, administration, and human resources (Shelina & Panjaitan, 2023). Effective management involves providing adequate facilities, implementing training based on teacher needs, and optimally managing resources, including time, energy, and budget. Well-planned management enables schools to create an environment conducive to teacher professional development. In this context, it is important for schools to formulate policies that support improving teacher competency, including providing access to relevant training and resources. Thus, optimal resource management can have a direct impact on improving teacher performance and mastery of Pedagogical Content Knowledge (PCK).

Thus, good operational management not only supports teacher development but also ensures the sustainability of improving the quality of learning in schools. In addition, the transformational leadership of the principal also plays an important role in improving the Pedagogical Content Knowledge (PCK) of teachers. Principals with this leadership style are able to provide the motivation, direction, and support needed by teachers to continue to develop professionally. Transformational leadership also creates a collaborative, innovative, and learning-oriented work culture. By providing positive inspiration and role models, principals can build trust and high morale among teachers (Bass & Avolio, 1994). Therefore, this study aims to examine how school operational management and principal transformational leadership can jointly contribute to improving the Pedagogical Content Knowledge (PCK) of elementary school teachers in Sail District. This study is expected to provide important contributions to academic literature and at the same time offer strategic recommendations for education policy makers, principals, and teachers in efforts to improve the quality of education. By focusing on two main aspects, namely school operational management and transformational leadership, this study is expected to provide new insights into how to effectively

METHOD

This study uses a quantitative approach with a survey method that aims to test the influence of school operational management and the principal's transformational leadership on teachers' PCK (Pedagogical Content Knowledge). According to Creswell & Creswell (2018), a quantitative approach is very suitable for research that relies on numerical data to explain certain phenomena, and the results can be strengthened by inferential statistical analysis. The survey method was chosen because it allows the collection of data that is systematically structured and can be measured with numbers, which can then be analyzed statistically to determine the relationship between variables. This survey is a method in quantitative research that aims to understand the relationship between variables and make generalizations about the population being studied, and is designed to produce an accurate and representative picture of an area (Muchlis, 2023). In addition, this method involves collecting data through questionnaires and interviews with representatively selected individual samples, so that the data produced is not only able to represent the characteristics of the population as a whole but also provides a deep understanding of the identity, views, feelings, and tendencies of respondents' actions which are the basis for explaining the relationship between research variables as a whole (Islamy, 2019).

Therefore, the quantitative approach through this survey method is designed to provide in-depth insight into the influence of school operational management and principal transformational leadership on improving teachers' PCK (Pedagogical Content Knowledge). By using valid and reliable research instruments, this method allows for structured and systematic data collection, which is then analyzed statistically to test hypotheses and understand the relationships between variables in depth. This approach not only aims to produce accurate generalizations of the population studied but also becomes a strong methodological foundation in supporting relevant research conclusions and recommendations to improve the quality of education.

FINDINGS AND DISCUSSION

In this discussion, a description of the research results of each variable will be presented using quantitative analysis techniques based on the descriptive analysis model approach. The research data concerns three variables, namely the first variable (X1) School Operational Management, the second variable (X2) Principal Transformational Leadership and the third variable (Y) PCK (Pedagogical Content Knowledge). The number of research subjects to be analyzed is 84 respondents. With the help of the SPSS Statistics 24 application program, a description of the characteristics of the research sample is obtained. The following are the average values, standard deviations, medians, modes, frequency distributions and histograms of the data. School Operational Management Variable (X1) The average values, medians, modes, standard deviations, variances and ranges of data for the School Operational Management variable (X1) can be seen in the following table:

Table 1. School Operational Management Variable (X1)

Variabel	Statistics		
	N	Valid	84
School Operational Management Variable (X1)		Missing	0
	Mean		97,40
	Std. Error of Mean		1,958
	Median		101,00
	Mode		54
	Minimum		54
	Maximum		120
	Sum		8182

Source: SPSS Processed Data, 2025

Based on the calculation results in table it explains that the school operational management variable obtained a mean value which is the average value of all school operational management variable data of 97.40, the middle value (median) of the school operational management variable of 101.00 and the value that often appears (mode) of the school operational management variable of 54. From this data, it can be concluded that the school operational management variable data is normally distributed. This is because the mean, median and mode values are almost the same. The following is a frequency description table for the School Operational Management variable (X1) along with its analysis.

Table 2. Frequency Distribution of School Operational Management Variable (X1)

Interval Skor	Frekuensi (f)	Persentase (%)	Kategori
54 – 69	7	8,33%	Low
70 – 85	15	17,86%	Medium
86 – 101	30	35,71%	Quite High
102 – 117	22	26,19%	High
118 – 120	10	11,91%	Very High
Total	84	100%	-

Source: SPSS Processed Data, 2025

From the table above, it can be seen that the majority of teachers at SDN Sail District have a "Quite High" perception of school operational management, with a total of 30 people (35.71%). This shows that in general, the operational management system in schools has been running well, although there are still some aspects that need to be fixed or improved.

In addition, there were 22 respondents (26.19%) who assessed school operational management in the "High" category, which indicates that most schools already have a relatively effective management system. Meanwhile, 15 respondents (17.86%) placed school operational management in the "Medium" category, indicating that although some schools already have a good system, there are still obstacles that need to be fixed, for example in aspects of strategic planning, administrative efficiency, and coordination between educators and principals.

On the other hand, 7 teachers (8.33%) gave an assessment in the "Low" category, which indicates that there are several obstacles in the implementation of operational management in certain schools. However, there were 10 teachers (11.91%)

who rated operational management in the "Very High" category, which means that in some schools, the management system is already running very optimally and efficiently.

From the mean value of 97.40, it can be concluded that in general, teachers' perceptions of school operational management are at a fairly high to high level. Thus, it can be said that the school operational management system implemented is quite effective in supporting the education process. However, various improvement efforts are still needed, such as strengthening the school governance system, utilizing technology in administration, and improving coordination between the principal, educators, and other education personnel to ensure that school management runs more optimally.

Principal Transformational Leadership Variable (X2)

The mean, median, mode, standard deviation, variance and range of data for the Principal's Transformational Leadership variable (X2) can be seen in the following table:

Table 3. Descriptive Statistics of the Principal's Transformational Leadership Variable (X2)

Variabel	Statistics		
Principal Transformational Leadership Variable (X2)	N	Valid	84
		Missing	0
	Mean		92,71
	Std. Error of Mean		1,087
	Median		91,00
	Mode		90
	Minimum		78
	Maximum		113
	Sum		7788

Source: SPSS Processed Data, 2025

PCK (Pedagogical Content Knowledge) Variable (Y) The mean, median, mode, standard deviation, variance and range of data for the PCK (Pedagogical Content Knowledge) variable (Y) can be seen in the following table:

Table 4. Descriptive Statistics of the PCK (Pedagogical Content Knowledge) Variable (Y)

Variabel	Statistics		
PCK (<i>Pedagogical Content Knowledge</i>)	N	Valid	84
		Missing	0
	Mean		106,19
	Std. Error of Mean		1,262
	Median		108,00
	Mode		108
	Minimum		85
	Maximum		128
	Sum		8920

Source: SPSS Processed Data, 2025

Based on the calculation results in the table, it explains that the PCK (pedagogical content knowledge) variable obtained a mean value which is the average value of all PCK (pedagogical content knowledge) variable data of 106.19, the middle value (median) of the PCK (pedagogical content knowledge) variable of 108.00 and the value that often appears (mode) of the PCK (pedagogical content knowledge) variable of 108. From this data, it can be concluded that the PCK (pedagogical content knowledge) variable data is normally distributed. This is because the mean, median and mode values are almost the same.

CONCLUSION

School operational management has a significant effect on the Pedagogical Content Knowledge (PCK) of elementary school teachers in Sail District. The results of the t-test show that this variable has a t-count of 7.171 with a t-table value of 1.663 and a significance of 0.000 ($p < 0.05$), so it can be concluded that school operational management contributes positively to increasing teacher PCK. The regression coefficient of 0.409 shows that every one-unit increase in school operational management will increase the teacher's PCK value by 0.409 units. Good school operational management allows teachers to get support in planning learning, managing facilities and infrastructure, and implementing more effective educational activities.

The principal's transformational leadership also has a significant effect on teacher PCK. The results of the t-test show that this variable has a t-count of 2.639 with a t-table value of 1.663 and a significance of 0.010 ($p < 0.05$), which means that the principal's transformational leadership positively influences teacher PCK. The regression coefficient of 0.271 indicates that every one unit increase in the principal's transformational leadership will increase the teacher's PCK by 0.271 units. Principals who implement transformational leadership are able to provide motivation, inspiration, and individual attention to teachers, so that they are more motivated to develop their pedagogical competence.

Simultaneously, school operational management and the principal's transformational leadership have a significant effect on teacher PCK, with an Fcount value of 78.536, Ftable of 2.71, and a significance of 0.000 ($p < 0.05$). The coefficient of determination (R^2) of 0.660 indicates that 66% of the variation in teacher PCK can be explained by these two variables, while the other 34% is influenced by other factors not studied. When these two factors are combined, the effect on teacher PCK increases to 65.7%. These results indicate that the synergy between good school operational management and the principal's transformational leadership can effectively improve teacher pedagogical competence. Therefore, this study recommends strengthening school operational management, improving the transformational leadership of school principals, and developing PCK-based training programs for teachers to improve the overall quality of education.

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REFERENCES

- Academia.edu. (2024). Pengaruh Kepemimpinan Transformasional dan Motivasi terhadap Kompetensi Pedagogis Guru.
- Anisa, F., & Effane, A. (2022). Tujuan Manajemen Sekolah. *Karimah Tauhid*, 1(1), 80–83.
- Ayuningtyas, A. D., & Apriandi, D. (2019). Pedagogical Content Knowledge (PCK) pada Mahasiswa Calon Guru Matematika. *NUMERICAL: Jurnal Matematika Dan Pendidikan Matematika*, 3(2), 119–130. <https://doi.org/10.25217/numerical.v3i2.616>
- Azizah, N., Tampubolon, A. P., & Sibarani, H. S. (2021). Komunikasi Organisasi: Kepemimpinan dan Gaya Kepemimpinan. *Komunika*, 17(1). <https://doi.org/10.32734/komunika.v17i1.6776>
- B.K, M. T. (2019). Pengaruh Kepemimpinan Transformasional Kepala Sekolah terhadap Kinerja Guru. *Jurnal Wahana Karya Ilmiah*, 3(2), 465–479.
- Banks, J. A. (2006). *Diversity and Citizenship Education: Global Perspectives*. John Wiley & Sons.
- Bass, B. M. (1985). *Leadership and Performance Beyond Expectations*. Free Press.
- Bass, B. M., & Avolio, B. J. (1994). *Improving Organizational Effectiveness through Transformational Leadership*. SAGE.
- Bass, B. M., & Riggio, R. E. (2006). *Transformational Leadership*. Psychology Press.
- Cahyo, K. N., Martini, & Riana, E. (2019). Perancangan Sistem Informasi Pengelolaan Kuesioner Pelatihan Pada PT Brainmatics Cipta Informatika. *Journal of Information System Research (JOSH)*, 1(1), 45–53. <https://ejurnal.seminar-id.com/index.php/josh/article/view/44>
- Charoline, C., Lestari, D., & ... (2020). Nilai Pengetahuan Pedagogik Bagi Calon Guru. In *Seminar Nasional Ilmu Pendidikan dan Multi Disiplin (Issue 3, pp. 166–174)*. <https://prosiding.esaunggul.ac.id/index.php/snip/article/view/23>
- Creswell, J. W., & Creswell, J. D. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (Fifth)*. SAGE.
- Data Pokok Pendidikan. (2024). *Jenderal Pendidikan Anak Usia Dini, Pendidikan*

Dasar Dan Pendidikan Menengah: Kementerian Pendidikan, Kebudayaan, Riset Dan Teknologi. <https://dapo.kemdikbud.go.id/guru/3/096004>

Dimas, Alvindi, Perdamean, Solin, R., & Mukhlisin, A. (2024). Implementasi Manajemen Operasional dalam Lembaga Pendidikan. *Jurnal Pendid*, 8(2), 28802–28809.

Fadilah, M., Permanasari, A., Riandi, R., & Maryani, E. (2020). Analisis Karakteristik Kemampuan Literasi Sains Konteks Bencana Gempa Bumi Mahasiswa Pendidikan IPA pada Domain Pengetahuan Prosedural dan Epistemik. *Jurnal IPA & Pembelajaran IPA*, 4(1), 103–119. <https://doi.org/10.24815/jipi.v4i1.16651>

Fathurrochman, I., Adila, P., Anjriyani, A., & Prasetya, A. Y. (2022). Pengelolaan Manajemen Sekolah yang Efektif. *Jurnal Pengabdian Kepada Masyarakat*, 2(2), 1363–1374.

Ghozali, I. (2018). *Aplikasi Analisis Multivariate Dengan Program IBM SPSS 25*. Badan Penerbit Universitas Diponegoro.

Gujarati, D. N., & Porter, D. C. (2012). *Basic econometrics* (5th ed.). New York: McGraw-Hill Education.

Hair, J. F., Page, M., & Brunsveld, N. (2020). *Essentials of Business Research Methods*. Taylor & Francis Group.

Haka, N. B., Yohana, R., & Puspita, L. (2020). Technological Pedagogical Content Knowledge Mahasiswa Calon Guru Biologi dalam Menyusun Perangkat Evaluasi Pembelajaran. *Vekto: Jurnal Pendidikan IPA*, 1(2), 73–88.

Hariyani, D. S. (2021). *Manajemen Keuangan 1*. In UNIPMA Press.

Imbron, & Pamungkas, I. B. (2021). *Manajemen Sumber Daya Manusia*. In Widina Bhakti Persada Bandung.

Irfan, M., Rahman, A., & Aras, L. (2023). Makin Dekat, Makin Cepat: Pengaruh Pokja Manajemen Operasional dalam Implementasi Program Sekolah Penggerak. *Jurnal Penelitian Dan Pengembangan Pendidikan*, 7(1), 11–18. <https://doi.org/10.23887/jppp.v7i1.56914>

Irfan, A., Setiawan, R., & Siregar, R. (2023). Lebih Dekat, Lebih Cepat: Pengaruh Kelompok Kerja Manajemen Operasional dalam Pelaksanaan Program Sekolah Mengemudi. *Jurnal Pendidikan*, 11(2), 78-95.

Islamy, I. (2019). *Penelitian Survei dalam Pembelajaran dan Pengajaran Bahasa Inggris*. Purwokerto: Universitas Muhammadiyah Purwokerto.

Khofifah, S., & Banin, A. (2023). Pengaruh Kepemimpinan Transformasional, Lingkungan Kerja, dan Motivasi Kerja terhadap Kinerja Guru di SMK

Kecamatan Sirampog . Jurnal Ilmu Manajemen dan Bisnis, 14(2), 60–70.

Kouzes, J. M., & Posner, B. Z. (2006). *The Leadership Challenge*. Jossey-Bass.

Kumala, V. M., Susilo, J., & Susanto, R. (2018). Hubungan Pengetahuan Pedagogik dengan Kompetensi Pedagogik serta Perbedaannya di Sekolah Negeri dan Sekolah Swasta. *Prosiding SNIPMD*, 1(1), 170–181.

Laila, IR (2022). *Pengaruh Kepemimpinan Transformasional Kepala Sekolah terhadap Kinerja Guru SMA Bakti Mulya 400 Jakarta*. Skripsi, UIN Syarif Hidayatullah Jakarta.

Magnusson, J., Kullberg, A., Innabi, H., Knutsson, L., Otter, M. Von, Landström, J., Magnusson, J., Kullberg, A., Innabi, H., & Knutsson, L. (2023). Prospective Teachers' Opportunities to Develop PCK from Participation in Learning Study. *Educational Action Research*, 31(3), 455–471. <https://doi.org/10.1080/09650792.2021.1997779>

Magnusson, S., Krajcik, J., & Borko, H. (1999). Nature, Sources, and Development of Pedagogical Content Knowledge for Science Teaching. In J. GessNewsome & N. G. Lederman (Eds.), *Examining Pedagogical Content Knowledge: the Construct and Its Implications for Science Education* (pp. 95–132). Kluwer.

Marfu'ah, D. (2023). *Pengaruh Pendidikan dan Pelatihan terhadap Profesionalisme Guru*. Skripsi, UIN Walisongo Semarang.

Muchlis, A. F. (2023). Metode Penelitian Survei-Kuesioner untuk Kesesakan dan Privasi pada Hunian Asrama. *Jurnal Lingkungan Binaan Indonesia*, 12(3), 154–163. <https://doi.org/10.32315/jlbi.v12i3.252>

Mutadi, M., Mudofir, M., & Munadi, M. (2021). Peran Manajemen Kepemimpinan, Pelatihan Dan Supervisi Terhadap Pedagogical Content Knowledge Di Madrasah. *Jurnal Ilmiah Ekonomi Islam*, 7(2), 638–647.

Nasbi, I. (2017). Manajemen Kurikulum: Sebuah Kajian Teoritis. *Jurnal Manajemen Pendidikan*, I(36), 318–330.

Nani Qurotul A'Yun. (2024). Analisis Pengaruh Manajemen Operasi dalam Perusahaan . *Lokawati Jurnal Penelitian Manajemen dan Inovasi Riset*, 2(6), 187–191.

Olfos, R., Goldrine, T., & Estrella, S. (2014). Teachers' Pedagogical Content Knowledge and its Relation with Students' Understanding. *Revista Brasileira de Educação*, 19(59), 913–944.

Peraturan Menteri Pendidikan, Kebudayaan, Riset, dan Teknologi Republik Indonesia Nomor 47 Tahun 2023 tentang Standar Pengelolaan pada Pendidikan Anak Usia Dini, Jenjang Pendidikan Dasar, dan Jenjang Pendidikan Menengah. (2023).

- Putra, HD (2023). Pengaruh Pelatihan dan Pengalaman Mengajar terhadap Kinerja Guru. Skripsi, UIN Syarif Hidayatullah Jakarta.
- Rachman, A. D. (2021). Leadership Content Knowledge Kepala Sekolah dalam Meningkatkan Kompetensi TPACK Guru di Era Digital. *Inspirasi Manajemen Pendidikan*, 9(5), 1273–1285.
- Rahmadi, I. F. (2019). Technological Pedagogical Content Knowledge (TPACK): Kerangka Pengetahuan Guru Abad 21. *Jurnal Pendidikan Kewarganegaraan*, 6(1), 65. <https://doi.org/10.32493/jpkn.v6i1.y2019.p65-74>
- Resbiantoro, G. (2016). Analisis Pedagogical Content Knowledge (PCK) terhadap Buku Guru SD Kurikulum 2013. *Scholaria: Jurnal Pendidikan Dan Kebudayaan*, 6(3), 153–162. <https://doi.org/10.24246/j.scholaria.2016.v6.i3.p153-162>
- Riduwan. (2018). Skala Pengukuran Variabel-Variabel Penelitian. Alfabeta.
- Riduwan, & Sunarto. (2011). Pengantar Statistika: Untuk Penelitian Pendidikan, Sosial, Ekonomi, Komunikasi dan Bisnis. Alfabeta.
- Rivai, A. (2020). Pengaruh Kepemimpinan Transformasional dan Budaya organisasi Terhadap Kinerja Karyawan. *Manegggio: Jurnal Ilmiah Magister Manajemen*, 3(2), 213–223. <https://doi.org/10.30596/manegggio.v3i2.5291> Published
- Rosita, Nelvita, R., & Mawaddah, N. H. (2020). Manajemen Operasional dalam Proses Pembelajaran Metode Sentra. *JECIES: Journal of Early Childhood Islamic Education Study*, 01(01), 49–61. <https://doi.org/10.33853/jecies.v1i1.54>
- Rukmana, S., Wiguna, S & Muchtar, M. (2022). Pengaruh Kepemimpinan Transformasional Kepala Sekolah terhadap Mutu Pendidikan di MTs IKABA Desa Paluh Manis Kecamatan Gebang. *Jurnal Idarah At-Ta'lim*. Vol. 1. No. 1
- Sabariah. (2022). Manajemen Sekolah dalam Meningkatkan Mutu Pendidikan. *Edukatif: Jurnal Ilmu Pendidikan*, 4(1), 116–122.
- Santoso, S. (2014). Menguasai Statistik di Era Informasi dengan SPSS 22. Jakarta: Elex Media Komputindo.
- Sarkim, T. (2015). Pedagogical Content Knowlegde: Sebuah Konstruk untuk Memahami Kinerja Guru di Dalam Pembelajaran. *Prosiding Pertemuan Ilmiah HFI Jateng Dan DIY*, 29(53), 25.
- Setiawan, U., Maryani, E., & Nandi. (2018). Pedagogical Content Knowledge (PCK) Guru Geografi SMA. *Jurnal Ilmiah Ilmu Sosial*, 4(1), 12–21. <https://ejournal.undiksha.ac.id/index.php/JIIS/index> Pedagogical
- Setyoningsih, A. I., & Hariyatmi. (2024). Pedagogical Content Knowledge (PCK)

- Guru Biologi SMA Se-Kartasura dalam Menyusun Modul Ajar. *Didaktika: Jurnal Kependidikan*, 13(2), 1819–1832. <https://doi.org/10.58230/27454312.643>
- Shelina, C., & Panjaitan, L. H. B. (2023). Manajemen Strategik dan Manajemen Operasional serta Implementasinya pada Lembaga Pendidikan. *MES Management Journal*, 2(2), 194–206. <https://doi.org/10.56709/mesman.v2.i2.84>
- Shulman, L. S. (1986). Those Who Understand: Knowledge Growth in Teaching. *Educational Researcher*, 15(2), 4–14.
- Sinaga, N. S., Aprilinda, D., & Budiman, A. P. (2021). Konsep Kepemimpinan Transformatif. *Cerdika: Jurnal Ilmiah Indonesia*, 1(7), 840–846. <https://doi.org/0.59141/cerdika.v1i7.123>
- Sintani, L., Fachrurazi, Mulyadi, Nurcholifah, I., Fauziah, Hartono, S., & Jusman, I. A. (2022). *Dasar Kepemimpinan Buku Refrensi*. Cendikia Mulia Mandiri.
- Sugiyono. (2017). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Alfabeta.
- Syahril, S. (2019). Teori-Teori Kepemimpinan. *Ri'ayah: Jurnal Sosial Dan Keagamaan*, 4(2), 208–215.
- Tampubolon, M. (2022). Dinamika Kepemimpinan. *SKYLANDSEA PROFESIONAL Jurnal Ekonomi ...*, 2(1), 1–7. <https://jurnal.yappsu.org/index.php/skylandsea/article/view/44%0Ahttps://jurnal.yappsu.org/index.php/skylandsea/article/download/44/50>
- Wahjono, S. I. (2022). *Manajemen dan Peran Manajer: Pentingnya Manajemen dan Peran Manajer di Sekolah*. Universitas Muhammadiyah Surabaya.
- Wahyuni, F. (2021). Kepemimpinan Transformatif dalam Pendidikan Islam. *Southeast Asian Journal of Islamic Education Management*, 2(2), 141–162. <https://doi.org/10.21154/sajiem.v2i2.51>
- Wiyono, B. (2019). Hakikat Kepemimpinan Transformatif. *INTIZAM: Jurnal Manajemen Pendidikan Islam*, 2(2), 74–83.
- Wulandari, M., & Iriani, A. (2018). Pengembangan Modul Pelatihan Pedagogical Content Knowledge (PCK) dalam Meningkatkan Kompetensi Profesional dan Kompetensi Pedagogik Guru Matematika SMP. *Kelola: Jurnal Manajemen Pendidikan*, 5(2), 177–189. <https://doi.org/10.24246/j.jk.2018.v5.i2.p177-189>