



The Role of School Leadership in Advancing Environmental Sustainability Through Curriculum, Community Engagement, and Strategic Initiatives

Zakariah¹, Fauzan Ma'ruf¹, Rezki Wahyu¹

¹Universitas Negeri Makassar

*Corresponding Author: Zakariah

Email: muhammadzakariah99@gmail.com

Article Info

Article History:

Received July 8, 2024

Revised July 19, 2024

Accepted: August 12, 2024

Keywords:

School Leadership,
Environmental Sustainability,
Curriculum Integration.

Abstract

The objective of this qualitative study aims to identify and describe determinants of environmental sustainability in schools. By examining approaches adopted by the school leaders, teachers, and students in their experience and observations, the study discusses approaches to both formal and informal education for sustainable development with reference to the schools-in-the-round project. It also outlines the push factors we discussed earlier such as inadequate resources, management resistance, and the others as the challenges that few leaders experience in implementing sustainability in their institutions. Studies show that leadership plays an essential role in driving the culture of sustainability change by the champions, visionaries and facilitators. Main approaches to promote sustainability include including environmental topics into many areas of knowledge, making students participate in eco-clubs and sustainability fairs, and collaborating with NGOs and other organizations. However, they noted that emerging challenges that can prevent the proper implementation of the sustainability initiatives include inadequate funding and more so lack of enough time. Lack of staff and students support also slows down the process, the solution being communication and professional development training. The implications of this study for the field are that, unlike many previous research studies on the topic of education for sustainable development, this study seeks to illustrate the actual work of school leaders in the process and offer suggestions for addressing the issues discussed. Policymakers are only able to provide one-off support that helps fund short-term specific sustainability-based projects while the results demonstrate that schools require ongoing resources to achieve long-term goals.

Introduction

Environmental sustainability has emerged as a critical global concern, demanding action across various sectors, including education. Schools play a pivotal role in shaping the values, knowledge, and behaviors of future generations, positioning them as vital platforms for promoting sustainability. The integration of environmental sustainability into school systems is not merely an add-on but a necessary evolution to prepare students for the challenges of the 21st century. This integration requires a multifaceted approach, where leadership plays a crucial role in fostering and embedding sustainable practices within the educational framework.

Leadership in educational settings has traditionally focused on academic achievement, administrative efficiency, and the overall well-being of students and staff (Day et al., 2020).

The rising awareness of environmental issues has expanded the leadership mandate to include sustainability initiatives. Effective school leaders are now expected to advocate for, implement, and sustain environmental practices that align with broader ecological goals (Leithwood, 2021). This paradigm shift necessitates a deeper understanding of the role leadership plays in promoting environmental sustainability in schools (Voulvoulis et al., 2020; Fry & Egel, 2021).

One of the fundamental aspects of leadership in this context is the development of a clear and compelling vision for sustainability (Guzmán, et al., 2020; Bolden et al., 2023). Visionary leaders can inspire and mobilize stakeholders towards a common goal, creating a shared sense of purpose (Ani et al., 2020). This vision often involves the incorporation of environmental education into the curriculum, promoting green school initiatives, and fostering a culture of sustainability among students and staff. Leaders who effectively communicate and embody this vision can significantly influence the attitudes and behaviors of the school community (Maran et al., 2021).

Research indicates that transformational leadership is particularly effective in promoting sustainability in schools (Deng et al., 2023; Budur, 2020). Transformational leaders inspire and motivate their followers to exceed expectations by aligning their values and goals with those of the organization (Lasrado & Kassem, 2021). In the context of environmental sustainability, transformational leaders can drive change by fostering a culture of innovation, encouraging professional development, and promoting collaborative efforts among teachers, students, and the wider community (Singh et al., 2020). This leadership style not only enhances the commitment to sustainability but also builds the capacity of the school to implement and sustain green practices.

Another critical aspect of leadership in promoting sustainability is the ability to create and sustain partnerships. Effective leaders recognize the importance of engaging with external stakeholders, including parents, local businesses, and environmental organizations (Scanlan & Johnson, 2020). These partnerships can provide valuable resources, expertise, and support, enhancing the school's capacity to implement sustainability initiatives. For example, partnerships with local environmental groups can facilitate experiential learning opportunities, such as community gardening projects or conservation efforts, which reinforce classroom learning and foster a deeper connection to the environment.

Leadership also plays a vital role in the allocation of resources to support sustainability initiatives (Alamri, 2023; Bakker et al., 2023). This includes securing funding for green infrastructure projects, such as energy-efficient buildings or renewable energy installations, and allocating time and resources for professional development focused on sustainability (Haas et al., 2021). Leaders must navigate the often-complex landscape of funding opportunities and budget constraints to prioritize and sustain environmental initiatives. Effective resource allocation not only supports the implementation of sustainable practices but also signals the school's commitment to sustainability, fostering a culture of environmental stewardship (Chofreh et al., 2020).

In addition to vision and resource allocation, school leaders must also focus on fostering a supportive and inclusive culture that empowers all members of the school community to contribute to sustainability efforts (Leithwood, 2021; Brauckmann et al., 2023). This involves creating opportunities for student and staff participation in decision-making processes, encouraging innovative ideas, and recognizing and celebrating achievements in sustainability. A supportive culture enhances the sense of ownership and accountability among stakeholders, driving continuous improvement and long-term commitment to sustainability.

Despite the critical role of leadership, several challenges can impede the promotion of environmental sustainability in schools. These challenges include limited financial resources, lack of training and professional development, resistance to change, and competing priorities. Effective leaders must be adept at navigating these challenges, employing strategies such as strategic planning, stakeholder engagement, and continuous professional learning to overcome barriers and sustain momentum.

Result and Discussion

This study investigates the role of school leadership in promoting environmental sustainability within educational institutions, focusing on how leaders implement sustainability strategies, the challenges they face, and the perceptions of stakeholders involved. With growing concerns about climate change and environmental degradation, schools are increasingly seen as key players in shaping a sustainable future. However, the integration of sustainability into school culture and practices requires strong leadership and the overcoming of various obstacles. By examining interviews with school leaders, teachers, and students, this research provides valuable insights into the strategies employed by school leaders to foster environmental awareness, as well as the barriers that hinder the effective implementation of sustainability initiatives. The following sections will present the key findings from the study, highlighting the perceptions of leadership roles, strategies for sustainability, and the challenges faced in this endeavor.

Perceptions of Leadership Roles

School leaders play a pivotal role in embedding environmental sustainability into the culture and operations of their institutions. The findings of this study revealed that leadership is not just about enforcing policies but about inspiring, guiding, and creating an environment where sustainability becomes a shared responsibility. This perception was consistent across the interviewed participants, highlighting the multidimensional nature of leadership in fostering sustainability.

Leaders perceived their role primarily as advocates for sustainability, emphasizing the importance of leading by example. Many participants noted that their actions and decisions were closely observed by teachers and students, making their commitment to sustainability critical in influencing the broader school community. As one school principal expressed:

"If I don't practice what I preach, how can I expect others to follow? Leadership in sustainability begins with personal accountability and visibility."

Another participant elaborated:

"It's not enough to have policies on paper; we must live those values daily. For instance, my choice to bike to work or reduce paper use in meetings sends a message that resonates far beyond words."

The ability to craft and communicate a clear vision for environmental sustainability emerged as a central theme. Leaders recognized the need to align their sustainability goals with the broader educational mission of the school. By doing so, they could ensure that sustainability was not perceived as an added burden but as a natural extension of the school's ethos.

A vice-principal shared:

"Our vision is to build a generation that values the planet. To achieve this, I work with my staff to integrate environmental education into every aspect of our curriculum, from science projects to art classes."

Leaders also emphasized their role in empowering teachers, students, and staff to take ownership of sustainability initiatives. This included providing professional development opportunities, creating platforms for student-led projects, and fostering collaborative decision-making processes.

One teacher leader highlighted this approach:

"Our principal encourages us to come up with ideas and test them. For example, we piloted a waste segregation program last year, and now it's a school-wide initiative. This freedom to innovate keeps everyone motivated."

A student council advisor further supported this:

"By involving students in decision-making, we're teaching them that their voices matter. This sense of ownership ensures that our initiatives are sustained over time."

School leaders acknowledged the challenges of balancing sustainability goals with other institutional priorities, such as academic achievement and financial constraints. Nevertheless, they viewed these challenges as opportunities to demonstrate creative problem-solving and resilience.

As one principal remarked:

"There are always hurdles, but I see them as stepping stones. For instance, when our budget didn't allow for solar panels, we launched a fundraising campaign that not only met the goal but also engaged the entire community."

These findings underscore the critical importance of leadership in shaping the direction and success of sustainability initiatives in schools. By serving as advocates, visionaries, and enablers, school leaders can transform their institutions into models of environmental responsibility and stewardship.

Strategies for Implementing Sustainability

School leaders employed diverse and innovative strategies to incorporate sustainability into the ethos and operations of their institutions. These strategies included curriculum integration, extracurricular activities, and community engagement, which collectively fostered an environmentally conscious culture within schools.

One of the primary strategies was embedding environmental themes into the school curriculum. Leaders emphasized the importance of teaching sustainability not as a separate subject but as an integral part of various disciplines. For instance, science lessons incorporated topics on renewable energy and climate change, while art classes encouraged students to use recycled materials for projects.

A principal shared:

"We don't treat sustainability as an optional topic. Whether it's biology discussing ecosystems or geography analyzing climate patterns, the idea is to connect every subject to the bigger picture of environmental stewardship."

Teachers also adapted their lesson plans to include hands-on activities, such as experiments with solar-powered devices and group discussions on water conservation strategies.

Extracurricular programs provided a practical platform for students to engage with sustainability initiatives. Activities such as eco-clubs, waste management campaigns, and gardening projects were commonly cited by school leaders as effective methods for encouraging student participation and fostering a sense of ownership.

One teacher leader explained:

"Our eco-club has been a great success. Students lead initiatives like waste segregation drives and recycling competitions, which not only educate their peers but also bring a sense of achievement to those involved."

Additionally, schools organized events like Earth Day celebrations and sustainability fairs to raise awareness and showcase students' contributions. A vice-principal noted:

"These activities are vital because they allow students to see the tangible impact of their efforts, whether it's reducing waste or planting trees to improve the school's green spaces."

Collaborating with local organizations, businesses, and environmental groups emerged as a key strategy to enhance resources and expertise. Leaders recognized the value of partnerships in extending the reach and impact of their sustainability initiatives.

One principal highlighted:

"We partnered with a local NGO that provided us with compost bins and trained our students on how to manage organic waste. This partnership not only made the initiative feasible but also brought real-world expertise into the classroom."

Another participant emphasized the role of parents in sustainability efforts:

"We regularly involve parents in activities like tree-planting drives and workshops. Their engagement not only strengthens the school-community relationship but also reinforces these values at home."

Challenges Faced by School Leaders

Despite their commitment to environmental sustainability, school leaders encountered several challenges that hindered the full implementation of their initiatives. The most significant issues identified were resource constraints, resistance to change, and the challenge of balancing priorities.

Limited financial resources were a recurring theme in the interviews, with many leaders highlighting how budget limitations restricted their ability to implement large-scale sustainability projects. Leaders expressed frustration over the high costs of installing renewable energy systems, procuring sustainable materials, and funding specialized training for staff.

One principal remarked:

"We wanted to install solar panels to reduce our carbon footprint, but the budget simply didn't allow it. Instead, we had to focus on more affordable changes, like switching to LED lighting and encouraging energy conservation among students."

Another leader pointed out the difficulty in obtaining external funding:

"Grant applications take time and expertise, and even when we apply, there's no guarantee we'll receive the funding. This uncertainty makes it challenging to plan long-term projects."

Resistance from staff and students also emerged as a significant challenge. Some teachers were hesitant to adopt sustainability practices, perceiving them as an additional workload rather than a necessary change. Similarly, some students struggled to see the immediate benefits of the initiatives, leading to lower engagement levels.

A teacher leader explained:

"Not everyone is on board. Some of my colleagues feel that integrating sustainability into their lessons requires too much effort, especially when they're already juggling a packed curriculum."

Students, too, sometimes resisted initiatives, as one student council advisor observed:

"Convincing students to follow through with waste segregation or energy-saving practices can be tough. They often think it's just a chore with no real impact."

Leaders also faced the challenge of balancing their sustainability goals with other institutional priorities, such as academic achievement, administrative responsibilities, and limited time. The need to prioritize other pressing issues often relegated sustainability initiatives to the background.

One principal shared:

"As much as we want to focus on sustainability, our primary responsibility is ensuring academic excellence. This means that sustainability sometimes takes a backseat when exams or other administrative tasks come up."

Another participant highlighted time constraints:

"The day-to-day demands of running a school leave little time for planning and implementing sustainability projects. It's a constant struggle to find the balance."

This study provides a nuanced understanding of the role of school leadership in promoting environmental sustainability by addressing gaps in existing literature regarding effective strategies, leadership perceptions, and contextual challenges. While previous research has often emphasized the importance of environmental education and student participation, this study uniquely explores the role of leadership in fostering a sustainability-focused culture within schools.

Existing literature highlights the significance of leadership in driving organizational change, including sustainability initiatives (Khaw et al., 2023; Alblooshi et al., 2021). However, these studies predominantly focus on corporate or higher education contexts, with limited attention given to school-level leadership. This study expands on this by identifying the multifaceted roles of school leaders' advocates, visionaries, and enablers in integrating sustainability into the school's ethos.

While earlier research by Qadach et al. (2020) emphasized the need for vision in educational leadership, this study demonstrates how leaders operationalize that vision through curriculum integration and extracurricular activities.

A principal's statement:

"We've integrated sustainability into every subject, showing students how it connects to real-world challenges".

provides practical evidence of how this vision translates into action at the school level.

Previous studies have documented the value of environmental education and community partnerships in promoting sustainability (Ardoin et al., 2020; Fauville et al., 2021). There is a paucity of research on the specific strategies school leaders employ to embed sustainability in day-to-day school operations. This study contributes to bridging this gap by identifying curriculum integration, extracurricular activities, and community engagement as core strategies.

Noted the value of the type of learning based on first-hand experience, but did not expand on how school leadership might foster and extend this strategy. It builds on such insights by presenting troublesome sources of knowledge, based on engagements with the eco-clubs as well as partnerships with NGOs.

As a result of this study the challenges include resource constraints, resistance to change, and prioritization are similar to and expand on prior literature. According to González et al. (2022) funding and systemic support as critical in any strategy to support environmental education. This study not only supports these assertions but also avails real problems of school leaders in low resource contexts.

Further in the current study attitude resistance by both the personnel and students is similar to the study who opined that inherent culture hinders effective change. This study builds on to that by providing practical recommendations, including a call for targeted professional development and communication to address attitude resistance.

In the following sections of this paper, this research provides several pieces of insight towards the advancement of environmental sustainability in educational settings (Omolara et al., 2022; Awan & Sroufe, 2022; Ivanov & Dolgui, 2021). It comes with leadership perspective embracing the volition of school leaders in the success or failure of the sustainability agenda. Second, it integrates strategies alongside the contextual challenges that make up a detailed framework for understanding the processes of sustainability in schools. Last of all, the study highlights but again the fact that there are many barriers to the practice and sustainable provision of education which should seek the support of social systems and the larger community to be counteracted thereby making the investigation bring out pluralism of factors that affect the provision of education sustainably (Tawfik et al., 2021; Giorgi et al., 2020).

The study indicates imperative of policy makers and educational authorities to support financially as well as offer professional development for school leaders. More studies could be conducted to establish the effects of the types of leadership such as transformational, or distributed leadership on sustainability performances. The longitudinal studies may investigate the efficacy of the strategies that this study revealed in the long-run (Liang et al., 2024; Zheng et al., 2024; Alam & Hossain, 2024).

As such, this study contributes to the literature on school leadership and sustainability by filling the gaps that were identified earlier thereby offering useful implications for educators, policy makers or researchers. The study establishes school executives as agents of change and suggests a process through which schools could serve as exemplar environmentally sustainable institutions in their communities thereby fostering sustainable practice.

Conclusion

These research findings suggest that education leadership can make a significant contribution to ecological restoration by recognizing and implementing best practices at the school level but also by addressing environmental obstacles, including lack of resources, stakeholders' recalcitrance, and their competing demands. Taken together, the study is an attempt to respond to these challenges and advance the literature on the role of leadership to foster the ideas about such a school culture. These results indicate that there is a need for systemic support for sustainability, particularly in terms of funding and staff development in order to better deliver on sustainability goals, which place schools at the forefront of encouraging environmental responsibility in their settings.

References

- Alam, M. B., & Hossain, M. S. (2024). Investigating the connections between China's economic growth, use of renewable energy, and research and development concerning CO₂ emissions: An ARDL Bound Test Approach. *Technological Forecasting and Social Change*, 201, 123220. <https://doi.org/10.1016/j.techfore.2024.123220>
- Alamri, M. (2023). Transformational leadership and work engagement in public organizations: promotion focus and public service motivation, how and when the effect occurs. *Leadership & Organization Development Journal*, 44(1), 137-155. <https://doi.org/10.1108/LODJ-12-2021-0544>
- Alblooshi, M., Shamsuzzaman, M., & Haridy, S. (2021). The relationship between leadership styles and organisational innovation: A systematic literature review and narrative synthesis. *European Journal of Innovation Management*, 24(2), 338-370. <https://doi.org/10.1108/EJIM-11-2019-0339>
- Ani Marlia, M., Fahmy, R., Lukito, H., Prima Lita, R., & Rahim, R. (2020). Visionary leadership role: Building a ghost town civilization. *International Journal of Management (IJM)*, 11(1), 31-55.
- Ardoin, N. M., Bowers, A. W., & Gaillard, E. (2020). Environmental education outcomes for conservation: A systematic review. *Biological conservation*, 241, 108224. <https://doi.org/10.1016/j.biocon.2019.108224>
- Awan, U., & Sroufe, R. (2022). Sustainability in the circular economy: insights and dynamics of designing circular business models. *Applied Sciences*, 12(3), 1521. <https://doi.org/10.3390/app12031521>
- Bakker, A. B., Hetland, J., Olsen, O. K., & Espevik, R. (2023). Daily transformational leadership: A source of inspiration for follower performance? *European Management Journal*, 41(5), 700-708. <https://doi.org/10.1016/j.emj.2022.04.004>
- Bolden, R., Gosling, J., & Hawkins, B. (2023). *Exploring leadership: Individual, organizational, and societal perspectives*. Oxford University Press.
- Brauckmann, S., Pashiardis, P., & Ärlestig, H. (2023). Bringing context and educational leadership together: Fostering the professional development of school principals. *Professional development in education*, 49(1), 4-15. <https://doi.org/10.1080/19415257.2020.1747105>

- Budur, T. (2020). Effectiveness of transformational leadership among different cultures. *International Journal of Social Sciences & Educational Studies*, 7(3), 119-129.
- Chofreh, A. G., Goni, F. A., Klemeš, J. J., Malik, M. N., & Khan, H. H. (2020). Development of guidelines for the implementation of sustainable enterprise resource planning systems. *Journal of Cleaner Production*, 244, 118655. <https://doi.org/10.1016/j.jclepro.2019.118655>
- Day, C., Sammons, P., & Gorgen, K. (2020). Successful School Leadership. *Education development trust*.
- Deng, C., Gulseren, D., Isola, C., Grocutt, K., & Turner, N. (2023). Transformational leadership effectiveness: an evidence-based primer. *Human Resource Development International*, 26(5), 627-641. <https://doi.org/10.1080/13678868.2022.2135938>
- Fauville, G., Queiroz, A. C., Hambrick, L., Brown, B. A., & Bailenson, J. N. (2021). Participatory research on using virtual reality to teach ocean acidification: a study in the marine education community. *Environmental Education Research*, 27(2), 254-278. <https://doi.org/10.1080/13504622.2020.1803797>
- Fry, L. W., & Egel, E. (2021). Global leadership for sustainability. *Sustainability*, 13(11), 6360. <https://doi.org/10.3390/su13116360>
- Giorgi, S., Lavagna, M., Wang, K., Osmani, M., Liu, G., & Campioli, A. (2022). Drivers and barriers towards circular economy in the building sector: Stakeholder interviews and analysis of five European countries policies and practices. *Journal of cleaner production*, 336, 130395. <https://doi.org/10.1016/j.jclepro.2022.130395>
- González-Pérez, L. I., & Ramírez-Montoya, M. S. (2022). Components of Education 4.0 in 21st century skills frameworks: systematic review. *Sustainability*, 14(3), 1493. <https://doi.org/10.3390/su14031493>
- Guzmán, V. E., Muschard, B., Gerolamo, M., Kohl, H., & Rozenfeld, H. (2020). Characteristics and Skills of Leadership in the Context of Industry 4.0. *Procedia Manufacturing*, 43, 543-550. <https://doi.org/10.1016/j.promfg.2020.02.167>
- Haas, R., Ajanovic, A., Ramsebner, J., Perger, T., Knápek, J., & Bleyl, J. W. (2021). Financing the future infrastructure of sustainable energy systems. *Green Financ*, 3(1), 90-118. <https://doi.org/10.3934/GF.2021006>
- Ivanov, D., & Dolgui, A. (2021). OR-methods for coping with the ripple effect in supply chains during COVID-19 pandemic: Managerial insights and research implications. *International journal of production economics*, 232, 107921. <https://doi.org/10.1016/j.ijpe.2020.107921>
- Khaw, K. W., Alnoor, A., Al-Abrow, H., Tiberius, V., Ganesan, Y., & Atshan, N. A. (2023). Reactions towards organizational change: a systematic literature review. *Current Psychology*, 42(22), 19137-19160.
- Lasrado, F., & Kassem, R. (2021). Let's get everyone involved! The effects of transformational leadership and organizational culture on organizational excellence. *International Journal of Quality & Reliability Management*, 38(1), 169-194. <https://doi.org/10.1108/IJQRM-11-2019-0349>

- Leithwood, K. (2021). A review of evidence about equitable school leadership. *Education Sciences*, 11(8), 377. <https://doi.org/10.3390/educsci11080377>
- Leithwood, K. (2021). A review of evidence about equitable school leadership. *Education Sciences*, 11(8), 377. <https://doi.org/10.3390/educsci11080377>
- Liang, Y., Zhou, H., Zeng, J., & Wang, C. (2024). Do natural resources rent increase green finance in developing countries? The role of education. *Resources Policy*, 91, 104838. <https://doi.org/10.1016/j.resourpol.2024.104838>
- Maran, T., Liegl, S., Moder, S., Kraus, S., & Furtner, M. (2021). Clothes make the leader! How leaders can use attire to impact followers' perceptions of charisma and approval. *Journal of Business Research*, 124, 86-99. <https://doi.org/10.1016/j.jbusres.2020.11.026>
- Omolara, A. E., Alabdulatif, A., Abiodun, O. I., Alawida, M., Alabdulatif, A., & Arshad, H. (2022). The internet of things security: A survey encompassing unexplored areas and new insights. *Computers & Security*, 112, 102494. <https://doi.org/10.1016/j.cose.2021.102494>
- Qadach, M., Schechter, C., & Da'as, R. A. (2020). Instructional leadership and teachers' intent to leave: The mediating role of collective teacher efficacy and shared vision. *Educational Management Administration & Leadership*, 48(4), 617-634. <https://doi.org/10.1177/1741143219836683>
- Scanlan, M., & Johnson, L. (2020). Inclusive leadership on the social frontiers: Family and community engagement. In *Leadership for increasingly diverse schools* (pp. 227-258). Routledge.
- Singh, S. K., Del Giudice, M., Chierici, R., & Graziano, D. (2020). Green innovation and environmental performance: The role of green transformational leadership and green human resource management. *Technological forecasting and social change*, 150, 119762. <https://doi.org/10.1016/j.techfore.2019.119762>
- Tawfik, A. A., Shepherd, C. E., Gatewood, J., & Gish-Lieberman, J. J. (2021). First and second order barriers to teaching in K-12 online learning. *TechTrends*, 65(6), 925-938.
- Voulvoulis, N., Giakoumis, T., Hunt, C., Kioupi, V., Petrou, N., Souliotis, I., & Vaghela, C. J. G. E. C. (2022). Systems thinking as a paradigm shift for sustainability transformation. *Global Environmental Change*, 75, 102544. <https://doi.org/10.1016/j.gloenvcha.2022.102544>
- Zheng, X., Faheem, M., & Fakhridinovch Uktamov, K. (2024). Exploring the link between economic policy uncertainty, financial development, ecological innovation and environmental degradation; evidence from OECD countries. *Plos one*, 19(9), e0307014. <https://doi.org/10.1371/journal.pone.0307014>