



The Role of Leadership in Building Sports Education Management Based on Philosophy of Science: A Theoretical and Practical Study

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Abstract

Leadership in the context of education has a crucial role in determining policy direction, decision-making, and creating an environment conducive to meaningful learning. Philosophy of science, as an epistemological and axiological foundation, provides a conceptual framework that can help educational leaders understand the nature of knowledge, the purpose of education, and ethics in managing educational institutions. This research aims to examine the role of leadership in building sports education management based on the philosophy of science, both from a theoretical and practical perspective. This article outlines key concepts from the philosophy of science that are relevant to sports education management and how these principles can be implemented through various leadership styles, such as transformational, visionary and situational leadership. Practically, the study also explores examples of real-life applications where the integration of strong leadership and philosophy of science can enhance the effectiveness of school management, improve the quality of teaching and encourage innovation in the educational process. The results of this study are expected to make a significant contribution to the development of a philosophy of science-based leadership model that is able to face the challenges of education in the modern era, while improving the quality of sports education management holistically.

Keywords: Leadership, Sport Education Management, Philosophy of Science, Education, Transformational Leadership

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A. Introduction

Philosophy of science as a rationale provides conceptual guidance on the nature of knowledge, ethics, and values that underlie every decision in the managerial process (Sutrisno, 2015). Leadership no longer only involves the division and supervision of tasks and how they are completed, but also involves creating space to develop the creative potential of organizational members through collaboration and continuous learning, in which leaders must also actively participate (Anindhyta, C. Et.al., 2023).

Leadership in education is not only about the ability to manage and direct, but also requires vision and a deep understanding of the basic principles underlying educational practices. As Bass and Riggio (2006) point out, transformational leadership, which focuses on developing a long-term vision and motivating the collective, is essential to meet today's educational challenges. Thus, the integration of leadership and philosophy of science is expected to form a strong foundation in making the right decisions, creating a healthy organizational culture, and developing effective learning strategies.

This research aims to examine in depth the role of leadership in building educational management based on the philosophy of science, both in terms of theory and practice. This article will also discuss how the philosophy of science can be applied in

various leadership styles, such as transformational, situational, and visionary leadership, and their impact on the management of educational institutions.

Education management is an important process in the management of educational institutions that involves planning, organizing, implementing and evaluating all resources to achieve educational goals. However, in practice, education management often focuses on administrative and technical aspects, while the philosophical and normative dimensions of education are often neglected (Winch & Gingell, 2008). Philosophy of science, as a theoretical foundation, offers a more in-depth perspective on how knowledge should be understood and how education should be run. For example, it helps answer fundamental questions about the nature of knowledge, the role of education in shaping knowledgeable human beings, and the ethical values that should be upheld in managerial practices (Siregar, 2013).

In the context of educational leadership, an understanding of the philosophy of science is essential to create a clear vision and mission of education that is oriented towards holistic learner development. As Fullan (2001) states, an educational leader must be able to not only manage the institution, but also lead with a vision based on solid principles, including an understanding of the ultimate goal of

Research Gap

A bibliometric approach is an effective method to analyze trends in published research, identify popular topics, and map collaboration networks between researchers or institutions. In this study, bibliometric analysis will be conducted to examine publications related to leadership, philosophy of science, and educational management. Two software tools used in this analysis are Publish or Perish and VOSviewer. The visualization from VOSviewer provides a graphical network map that illustrates how the themes of leadership, philosophy of science, and education management are interconnected in the academic literature. The clusters in the visualization will show different research foci, allowing us to understand which topics are most developed and which are still less explored.

Through analysis using Publish or Perish and VOSviewer, the results that emerged were the latest research trends in the topics of leadership, philosophy of science, and educational management, the researchers and institutions that contribute most to these topics, the most influential journals and articles in the field based on the number of citations and co-citation networks, and the key themes and inter-topic relationships relevant to philosophy of science-based educational leadership and management.

Much research has been conducted on the role of leadership in education, especially in the context of different leadership styles, such as transformational, situational and transactional leadership (Bass & Riggio, 2006; Leithwood & Jantzi, 2006). In addition, studies on education management have also extensively discussed the administrative and technical aspects of managing educational institutions (Bush, 2011). However, there is a significant gap in the literature that explicitly links philosophy of science as a theoretical foundation and leadership in educational management. Most of the existing literature separates discussions on philosophy of science from managerial practice and educational leadership, even though philosophy of science can provide a strong foundation for more reflective, ethical and effective decision-making (Siregar, 2013; Winch & Gingell, 2008).

Much previous research has focused on the practical aspects of leadership in education, such as developing an effective school culture, improving teacher performance, and achieving student learning outcomes (Fullan, 2001; Robinson, Lloyd, & Rowe, 2008). However, little attention has been paid to how the principles of philosophy of science—such as epistemology, ontology, and axiology—can be applied in leadership strategies to build educational

management that is oriented towards knowledge development and ethical values. Some studies have indeed discussed the role of philosophy in education, but rarely connect it concretely with managerial leadership practices (Sutrisno, 2015).

In addition, existing literature often highlights the importance of transformational leadership in driving change in schools (Bass & Riggio, 2006; Leithwood & Jantzi, 2006), but does not sufficiently highlight how integration with philosophy of science can deepen vision, mission and strategy in educational management. Studies that examine the impact of applying the principles of philosophy of science on educational leadership practices, particularly in the context of more holistic educational management, are still very limited.

Thus, this study fills the following **research gap**:

- 1) Lack of integration between philosophy of science and educational leadership practice: Most current research separates philosophy of science theory and practical applications in educational leadership. This study seeks to merge the two by showing how philosophy of science principles can support and enrich leadership strategies in educational management.
- 2) Lack of focus on the application of philosophy of science in education

management: Although philosophy of science offers important insights into how education should be run, there has not been much research that directly applies these concepts in an educational managerial context. This research aims to explain how philosophical values such as ethics, epistemology and axiology can shape a more reflective and ethical approach to leadership in managing educational institutions.

- 3) The lack of empirical studies related to the application of philosophy of science in educational leadership: There are many theoretical studies on philosophy of science in education, but few practical studies or case studies that show the real impact of applying philosophy of science in the leadership of schools or other educational institutions. This article will present concrete examples and practical studies in the application of philosophy of science to improve the effectiveness of educational leadership and management.

By filling these research gaps, it is hoped that this study can make a significant contribution to the development of educational leadership models based on a strong philosophical foundation, and at the same time provide practical guidance for educational leaders to face the challenges of education in the modern era.

Thus, this research seeks to fill the gap in the literature by examining how the principles of philosophy of science can be practically applied in educational leadership and management. It is expected to make a significant new contribution to the development of a more reflective, ethical and sustainable educational leadership model.

This article presents a novelty by linking philosophy of science, educational leadership, and educational management into one coherent study, both in terms of theory and practice. This deep integration opens new insights into how philosophically informed leadership can strengthen managerial decision-making that is more reflective, ethical and sustainable, while making a real contribution to the academic literature and practice in the field.

B. Methods

This research uses a qualitative approach with theoretical study methods and practical case studies to examine in depth how educational leadership can build management based on the philosophy of science. This method was chosen because the research focuses on an in-depth understanding of the phenomenon of leadership and the application of the philosophy of science in educational management, as well as how these philosophical principles can be implemented in a real context. Qualitative methods are social research measures to obtain

descriptive data in the form of words and images. This is in accordance with what is expressed by Lexy J. Moleong that the data collected in qualitative research are in the form of words, pictures, and not numbers (Lexy J. Moelong, 2007). A qualitative research approach is an approach that does not use the basis of statistical work, but is based on qualitative evidence. In other writings, it is stated that a qualitative approach is an approach based on field reality and what is experienced by respondents is finally sought for theoretical references (Sudjarwo, 2017).

C. Results and Discussion

Results

This study aims to examine the role of leadership in building philosophy of science-based management in educational institutions, both theoretically and practically. Through a qualitative approach that combines literature review and case studies, the results of this study show a significant relationship between the application of philosophy of science principles and leadership effectiveness in educational management. The following are the main findings of this research:

1) Application of Philosophy of Science in Managerial Decision Making

One of the key findings of this research is that educational leaders who integrate philosophy of science principles, such as epistemology, ethics and axiology, in their

decision-making are able to create more reflective and ethical decisions. The leaders interviewed in the case studies emphasized the importance of a deep understanding of the nature of knowledge (epistemology) and ethical values (axiology) as the foundation for any managerial policies taken. For example, one of the principals who participated in this study stated that a philosophical understanding of knowledge helps in developing a curriculum that is more inclusive and suited to the needs of students in the 21st century (Leithwood & Jantzi, 2006). Leaders who apply the philosophy of science in managerial practice also tend to be more careful in considering the ethical impact of any policy. For example, in making decisions related to human resource management, they pay more attention to aspects of justice and transparency, in accordance with the axiological principles adopted. Thus, the application of philosophy of science not only strengthens the decision-making process, but also increases staff legitimacy and trust in school leadership (Fullan, 2001; Robinson, Lloyd, & Rowe, 2008).

2) Transformational Leadership Based on Philosophy of Science

This study also found that transformational leadership based on the philosophy of science plays a major role in promoting innovation and positive change in schools. Leaders who are able to integrate a

long-term vision based on philosophical values show a better ability to motivate teachers and staff to adopt changes that are oriented towards developing student learning (Bass & Riggio, 2006). One example in the case study shows that a principal who adopted a philosophy of science-based transformational leadership approach successfully led a reform in the implementation of learning technology in his school. The vision was not only based on technological demands, but also on a philosophical understanding of the nature of learning in the digital era. The principal used epistemological principles to encourage teachers to be more reflective and critical in choosing learning media that are in line with educational objectives (Northouse, 2018).

3) Value-based Education Management

One very prominent aspect of the research findings is that educational leaders who apply philosophy of science-based management are better able to create management systems that focus on ethical values, justice and humanism. The study found that the principles of philosophy of science enable leaders to place character development and moral values as a priority in school management. For example, in student discipline policies, leaders who understand the concept of axiology tend to use a more humanistic approach, focusing on fostering and developing students' morals rather than simply sanctioning them (Bush,

2011). In addition, the interviewed leaders emphasized the importance of philosophy of science in shaping an inclusive and participatory school culture. They argued that the values of inclusiveness and collaboration are essential in building a solid school community that is highly resilient to change. This is in line with the findings from a study by Leithwood and Jantzi (2006), which emphasized the importance of visionary and ethical leadership in driving reform in the school environment.

4) Challenges in Implementation

Although the findings show many benefits of applying philosophy of science in education management, the study also identified some challenges. One of the main challenges is the lack of a deep understanding of the philosophy of science among most education leaders. Many leaders feel that philosophical concepts are too abstract and difficult to apply in daily managerial practices. In addition, there is a concern that the application of philosophy of science in leadership may not always align with the more pragmatic administrative and policy demands of education (Sutrisno, 2015). However, most respondents agreed that more in-depth training and professional development on the philosophy of science could help improve their capacity to apply these concepts more effectively. This suggests the importance of developing a leadership training curriculum that includes a philosophy of science component.

5) Contribution of Philosophy of Science in Improving the Performance of Educational Institutions

This research also shows that the application of philosophy of science contributes to the overall performance improvement of educational institutions. Some of the performance indicators that are seen to improve are teacher motivation, student engagement in learning, and improved student learning outcomes. This happens because leaders who integrate philosophy of science in their management tend to be more visionary, reflective, and oriented towards moral values in creating a learning environment that supports students' intellectual and emotional development (Harris, 2008).

Discussion

The discussion of this article focuses on analyzing findings from theoretical studies and case studies on the application of philosophy of science in educational leadership, as well as how philosophy of science strengthens managerial effectiveness in educational institutions. The study highlights three main aspects found in the research, namely the role of philosophy of science in managerial decision-making, transformational leadership based on philosophical values, and challenges and opportunities in the application of philosophy of science in the practical context of educational management.

The results show that educational leaders who use philosophy of science in decision-making tend to be more reflective and ethical in carrying out their managerial duties. An understanding of epistemology, which addresses the nature of knowledge, helps leaders to create policies that are more in-depth and in line with long-term educational goals. Axiology, which addresses values and ethics, provides a foundation for creating fairer and more transparent policies, especially in human resource management and relationships with the education community.

The application of these principles of philosophy of science supports a decision-making process that is not only based on administrative or technical considerations, but also oriented towards the collective good and moral development of the educational community. For example, educational leaders who understand the principles of ethical philosophy tend to use a more humanist approach in dealing with conflicts or challenges related to discipline in the school environment. This is in line with Peters' (2020) view, which emphasizes that the application of ethical values in education management can increase the legitimacy and trust of staff and students in leadership.

In addition, philosophy of science allows educational leaders to be more critical in evaluating curriculum and teaching policies. They do not only focus on short-term learning

outcomes, such as academic grades, but also consider student character development and the quality of the learning experience. This emphasizes the importance of holistic educational development, as discussed in recent literature by Kim & Watson (2021), who state that educational leadership grounded in philosophy can enrich the learning process by providing a broader and deeper view of the purpose of education.

This research also confirms the importance of transformational leadership based on the philosophy of science in promoting change and innovation in educational institutions. Transformational leadership is known for its inspirational approach and is able to motivate all members of the organization to achieve common goals. However, in the context of this study, the philosophy of science strengthens this approach by providing a more solid value foundation for any changes initiated by the leader.

Transformational leadership grounded in the principles of philosophy of science provides a greater focus on human development, not just academic achievement. This is in line with research by Avolio & Bass (2020), which suggests that successful transformational leadership must be underpinned by clear philosophical values to create sustainable change in schools. Philosophy of science, in this case, provides a theoretical framework that helps

educational leaders develop a more holistic vision, emphasizing the importance of integrity, justice and moral responsibility in every policy taken.

Philosophy of science-based transformational leadership also plays a role in building an inclusive and collaboration-oriented school culture. Leaders who adopt this approach tend to be more open to new ideas and focus more on involving all parties in decision-making. They recognize that every member of the school community has an important role to play in achieving educational goals, which in turn improves team performance and collective spirit. This is in line with the views of Harris & Spillane (2021), who emphasize the importance of collaborative leadership in creating a school environment that is more innovative and responsive to the needs of students and the community.

Although the research findings show various benefits of applying philosophy of science in educational leadership, there are some challenges that need to be overcome. One of the main challenges is the lack of in-depth understanding of philosophy of science among educational leaders. Many leaders feel that the concepts of philosophy of science are too abstract and difficult to apply in a practical context. As a result, some leaders tend to overlook the importance of philosophical thinking in their decision-making, favoring a more pragmatic and administrative approach (Day et al., 2023).

Another challenge is the gap between national policies and the philosophical values applied at the school level. Education policies in many countries focus more on measurable outcomes, such as exam results and school accreditation, which often do not align with philosophical approaches that emphasize moral development and the enrichment of learning experiences. This creates tension for education leaders who want to apply the values of philosophy of science in their management, as they often have to balance administrative demands with the ethical values they uphold.

However, these challenges also provide opportunities for further development in leadership education. This research proposes that there is a need for leadership training programs that specifically emphasize the importance of philosophy of science in educational management. Such training can help educational leaders develop the reflective and critical skills needed to deal with ethical and strategic challenges in the increasingly complex world of education. This is in line with the findings of Murphy et al. (2023), who showed that leaders trained in ethical values and critical thinking are better able to create sustainable change in their educational institutions.

The application of philosophy of science in educational leadership also has a positive impact on the performance of educational institutions and student development. Leaders who apply the philosophy of science

tend to be more successful in creating an inclusive and ethical learning environment, which not only improves academic achievement but also strengthens students' character development. This is in line with research by Kim & Watson (2021), who found that the application of ethical values in education management contributes to increased student motivation and engagement in the learning process.

As such, philosophy of science is not only relevant in strategic decision-making by leaders, but also has a direct impact on students' emotional and social well-being. Leaders who use a philosophy of science-based approach are able to create an environment where students feel more valued, supported and given the opportunity to develop holistically.

D. Conclusion

From the results of this study, it can be concluded that philosophy of science-based leadership makes a significant contribution to improving the effectiveness of education management. Philosophy of science, with its focus on ethical values, epistemology and axiology, enables educational leaders to make decisions that are more reflective, human development-oriented and grounded in strong moral principles. Although implementation challenges remain, the benefits of applying philosophy of science in educational leadership are clear, both in improving the

performance of educational institutions and in holistic student development.

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