



AXIOLOGY OF SCIENCE: VALUES, FUNCTIONS, ETHICS OF SCIENCE

Muktasim Billah

tasim1922@gmail.com

Nurul Jadid University, East Java, Indonesia

Abstract:

This research aims to explore the conceptual foundations of axiology in science, including how to optimally integrate moral values, ethics, and social commitment into the development of scientific disciplines. The approach employed includes a qualitative literature review to examine various sources discussing axiological principles, the role of science in society, and ethical principles for scientists. The primary analysis indicates that scientific knowledge grounded in moral and ethical values can foster sustainable and accountable innovation, while raising educational standards and research activities. The integration of moral and ethical values is essential for maintaining harmony between technological progress and social obligations, while simultaneously protecting the sustainability of nature and fostering a civilized community. However, the research also reveals that a number of educational and research institutions have not yet fully implemented these values, potentially leading to social and environmental harms. The study's conclusions emphasize the urgency of axiology as the primary foundation for building a balanced and responsible science. Therefore, further development research using a mixed-methods approach and emphasizing empirical data is recommended to further explore the application of axiology in science across diverse educational and research environments. With these steps, it is anticipated that scientific progress will proceed in a sustainable, dignified manner, and provide substantial benefits to the welfare of humanity and the surrounding ecosystem.

Keywords: *Axiology of Science, Moral Values, Ethics of Science, Function of Science.*

INTRODUCTION

Science is indeed important, but the values, functions, and ethics within science itself also require attention. Science has become a primary foundation for the development of an increasingly complex and dynamic modern society (Husna & Andayani, 2024). In various parts of the world, the role of scientists and educational institutions is crucial in determining the direction of national development, both technologically, economically, and socially (Maulana et al., 2025). (Nasir, 2021) Social facts show that rapid technological progress is often accompanied by major challenges, such as widening economic inequality, unequal access to resources, and environmental degradation that threatens the sustainability of life. (Fuady, 2018) This condition indicates the importance of developing science that not only emphasizes technical and empirical aspects, but also must consider moral, ethical, and social values. Without a strong foundation of values, scientific progress can lead to conflict and long-term damage, making strengthening the axiological dimension of science increasingly

urgent and relevant (Munawwaroh et al., 2024). Ethical and meaningful science will be able to provide sustainable solutions and balance the needs of society with the sustainability of nature. Facts show that many educational and research institutions have not effectively integrated moral and ethical values into their scientific development processes. (Labibah et al., 2025) Many research and innovation outcomes neglect aspects of social responsibility and environmental sustainability, even though these values are crucial for building a responsible and ethical system. The gap between axiological theory and actual practice leads to the emergence of irresponsible use of science, causing social and ecological damage. This situation demands a revision of the scientific development system and the application of moral values at every stage of the scientific process. Developing education based on these values is a crucial instrument in producing scientists and practitioners who are not only intellectually intelligent but also possess a high level of moral awareness and social responsibility, thus being able to provide optimal benefits to the wider community (Rodliyah et al., 2024).

Previous research shows a trend of increasing attention to aspects of values and moral responsibility in scientific development. Researchers such as Mayasari et al. (2022) and Al Bana et al. (2023) and Busthomi (2024) have begun to emphasize the importance of emphasizing moral, aesthetic, and socio-political values as an integral part of the scientific process. They assert that science must balance technical aspects with the primacy of moral values and the social responsibility of scientists. Furthermore, developing the character of scientists with noble morals and social ethics is also a primary focus of these studies. However, a deeper understanding of how axiology in science can be implemented effectively in sustainable societal development and the creation of moral innovations still requires deeper study and a broader context.

Research on the axiology of science is crucial because it can provide a conceptual and practical foundation oriented toward sustainable and civilized development. Science developed without a foundation in values has the potential to cause negative impacts such as environmental damage, social injustice, and the misuse of technology. Therefore, this research is important as a strategic step in emphasizing that scientific development must be harmonious and responsible. Furthermore, this research will help broaden the insights of scientists and educators about the importance of incorporating moral, ethical, and social responsibility aspects into the innovation process and application of science. Thus, science is not only a tool for material progress, but also a force supporting the creation of a cultured, moral, and sustainable society.

The purpose of this research is to explore and understand the basic concepts of the axiology of science, which encompasses moral values, ethics, and the purpose of using science in human life. It explains how moral, ethical, spiritual, and socio-political values form an important foundation in the development of science, focusing not only on technical aspects but also on humanitarian aspects and social responsibility. It analyzes the function of science in modern society from an axiological perspective, namely how science can provide sustainable benefits and maintain a balance between technological progress and moral, social, and environmental aspects. It examines the ethics of science and the moral responsibility of scientists in carrying out scientific activities so that the results bring positive benefits and do not harm society and the environment. It provides a basis for strengthening education and scientific practice that integrates.

RESEARCH METHODS

This research employed a literature review, and the method employed was library research. Library research is research that collects data from various sources relevant to the research topic. The approach employed in this study is qualitative, emphasizing comparative analysis and the dynamics of the phenomena studied using scientific logic. This qualitative approach produces descriptive or statement-based data. (Busthomi, 2024)

The data sources used in this study came from books, journals, and news articles highly relevant to the topic. To analyze the data, the researcher employed a content analysis method, gathering various references to develop new ideas. These concepts were then implemented in the form of messages contained within a comprehensive work..

RESULTS AND DISCUSSION

Basic Concepts of the Axiology of Science

The axiology of science is a branch of philosophy that studies the values and principles of life from a scientific approach. Etymologically, the word "axiology" comes from the Greek words "axios," meaning value, and "logos," meaning science or theory. Thus, axiology means the study of values. In the context of science, axiology discusses how science is viewed based on its purpose, how it is used, and its benefits in human life. (Mayasari et al., 2022) Science is not only about knowledge or facts, but also the values they contain, such as morals, ethics, and the purposes for which they are used. Therefore, true science is science that not only drives technical progress but also provides benefits and goodness to society, socially and spiritually.

According to the Great Indonesian Dictionary, axiology is the study of values, especially ethics, and the usefulness of science in human life. Experts such as Suriasumantri and Kattsoff also emphasize that axiology is a theory of value related to the usefulness and knowledge gained, while also investigating the nature of value from a philosophical perspective. Thus, the basic concept of the axiology of science is understanding science as knowledge that has implications for values and ethics, and assessing its usefulness in human life as a whole, not only in technical aspects but also in moral and social aspects.

Values in the Axiology of Science

Values in the axiology of science are moral and spiritual values that form an essential foundation for the development of science. These values guide science so that it emphasizes not only technical matters and is based on experience, but also encompasses ethical aspects and human life. In axiology, moral values discuss right and wrong, good and bad, while spiritual values provide an understanding of humanity's relationship with God and social responsibility. According to Rosnawati (2023), moral and spiritual values in science shape the character and ethics of scientists, enabling them to be responsible and ethical in the use of knowledge. Education that integrates Islamic values spiritually can produce practitioners who are not only intellectually intelligent but also possess noble character and are aware of the social function of science (Rodliyah et al., 2024). Axiology is a branch of philosophy that examines aspects of the quality of human life, namely ethics (morals) and aesthetics (beauty, art). (Tania et al., 2025). (According to Bramel in Tania) 2025, axiology is divided into three: (1) Moral Conduct, this field

explains the specific discipline of "ethics" or ethical values. (2) Aesthetic Expression, this field explains the theoretical concept of beauty or aesthetic values. (3) Socio-Political Life, this field creates the concept of socio-political or social and political values. (Amalia et al., 2025)

1. Moral Conduct, namely moral action, this field gave birth to the specific discipline of ethics. Islamic educational philosophy and educational ethics are closely related. Moral issues cannot be separated from the human determination to discover the truth, because discovering the truth, and especially defending the truth, requires moral courage. It is difficult to imagine the development of science and technology without the control of ethical and religious values. Therefore, it is based on a moral ethical approach. 2. Aesthetic expression, namely the expression of beauty, this field gives birth to beauty. Aesthetics are values related to artistic creation and our experiences related to art. Educational aesthetics emphasizes the "predicate" of beauty given to artistic and creative products (Samsul, 2025).

3. Socio-political life, namely socio-political life, which will give rise to socio-political philosophy. Social ethics, for example, must be based on the principles of equality and togetherness; social justice; openness and deliberation.

There are three things we can recognize as values: subjective values, values related to practice, and values added to objects. The first is value related to the subject. This means that value is related to the presence of humans as subjects. If there are no humans to give value, then that value will never exist. For example, if Mount Merapi erupts, it will still erupt even if there are no humans present. However, whether the eruption is considered beautiful or dangerous depends on the human perspective. (Mayasari et al., 2022) Second, value in a practical context. This means that the subject wants to create something such as a painting, pottery, and so on. Third, it relates to the added value of an object. This added value can be cultural, aesthetic, obligatory, sacred, truthful, or anything else. It could be.

CONCLUSION

This research concludes with a valuable lesson: scientific knowledge cannot be separated from the foundation of moral and ethical values in its development process. The main implication is the necessity of combining technical scientific elements with moral, ethical, and social principles, so that science not only produces material progress but also benefits society and ensures its continued existence. A thorough understanding of the axiological function of science is crucial for developing responsible scientists and practitioners with high integrity.

From a scientific contribution perspective, the findings of this research reinforce the view that developing science based on ethics can spur sustainable and accountable innovation, while also enhancing the quality of education and research activities. The integration of moral and ethical values plays a role in maintaining public trust in science and ensuring that the application of science does not negatively impact the social order or natural ecosystems.

However, this research has certain limitations, particularly in the scope of the literature review and the descriptive qualitative approach, which results in a lack of quantitative-based empirical data. Therefore, it is recommended that further studies employ a mixed-methods approach, emphasizing comprehensive empirical case analysis, to test the applicability of the axiology of

science in various educational and research settings. Future research may also explore practical obstacles and concrete solutions to implementing scientific moral and ethical values in a more structured manner. With this approach, scientific progress can proceed sustainably, with dignity, and have a significant positive impact on human well-being and environmental preservation.

REFERENCES

- Abadi, T. W. (2016). Aksiologi: Antara Etika, Moral, dan Estetika. *KANAL: Jurnal Ilmu Komunikasi*, 4(2), 187. <https://doi.org/10.21070/kanal.v4i2.1452>
- Amalia, R., Kartika Aulia Rakhmat, R., Muhammadiyah Makassar, U., Sultan Alauddin No, J., Sari, G., Rappocini, K., Makassar, K., & Selatan, S. (2025). Kajian Aksiologi Dalam Pendidikan. *Journal on Education*, 07(02), 11503–11509.
- Busthomi, F. (2024). Telaah Filsafat Ilmu dalam Tanggung Jawab Seorang Ilmuwan. *MULTIPLE: Journal Global and Multidisciplinary*, 2(10), 3412–3426. <https://journal.institercom-edu.org/index.php/multiple>
- Fuady, A. H. (2018). Teknologi Digital dan Ketimpangan Ekonomi di Indonesia. *Masyarakat Indonesia Majalah Ilmu-Ilmu Sosial Indonesia*, 4(1), 75–88.
- Husna, F., & Andayani, S. A. (2024). Development of Big Data Information Toward Quality Education. *Proceeding of International Conference on Education, Society and Humanity*, 2(2), 107–114.
- Labibah, F., Suciptaningsih, O. A., & Anggraini, A. E. (2025). Integrasi Nilai-Nilai Filsafat Etis dalam Pengembangan Media Pembelajaran Pendidikan Dasar. *Jurnal Pendidikan Dan Pembelajaran Indonesia (JPPI)*, 5(1), 338–347. <https://doi.org/10.53299/jppi.v5i1.949>
- Mayasari, A., Natsir, N. F., & Haryanti, E. (2022). Aksiologi Ilmu Pengetahuan dan Keislaman. *JIIP - Jurnal Ilmiah Ilmu Pendidikan*, 5(1), 218–225. <https://doi.org/10.54371/jiip.v5i1.401>
- Maulana, M. Z., Mannan, A. F., Shulhani, R., & Supardi, S. (2025). Integrating Technology-Based Public Relations to Improve Brand Identity in Islamic Boarding Schools. *Journal of Asian Islamic Educational Management (JAIEM)*, 3(1), 9–16.
- Munawwaroh, I., Qushwa, F. G., Hefniy, H., & Tohet, M. (2024). Assistance for the Furudul Ainiyah Program to Improve the Quality of Madrasah Graduates. *Communaute: Journal of Community Service*, 3(2), 179–191.
- Nasir, M. (2021). Aksiologi Ilmu Pengetahuan dan Manfaatnya Bagi Manusia. *Syntax Idea*, 3(11), 2457. <https://doi.org/10.36418/syntax-idea.v3i11.1571>
- Rodliyah, S., Khusnuridlo, M., & Fauzi, I. (2024). Optimizing the quality of Islamic Senior High School graduates through curriculum management of vocational programs based on pesantrens in East Java, Indonesia. *Cogent Education*, 11(1), 2423437.
- Samsul, Z. H. S. (2025). Quality Control in HR Management: Ensuring Accreditation in Higher Education. *Evaluasi: Jurnal Manajemen Pendidikan Islam*, 9(1), 142–158.
- Suhermanto, S., & Jasri, M. (2024). Kiai Kampung and Transformational Leadership: A Model for Non-formal Education to Improve Community Quality of Life. *Journal of Pesantren and Diniyah Studies*, 1(2), 165–174.

- Sa'diyah, H., Manshur, U., & Suhermanto, S. (2024). Integration of Talking Stick and Audio Visual: an Innovative Approach in Improving Student Learning Outcomes. *FALASIFA: Jurnal Studi Keislaman*, 15(1), 48-60.
- Surajiyo, S., & Dhika, H. (2024). Relasi Ilmu dan Etika: Sebuah Kajian Filsafat Ilmu. *IKRA-ITH HUMANIORA : Jurnal Sosial Dan Humaniora*, 8(3), 140–150. <https://doi.org/10.37817/ikraith-humaniora.v8i3.4192>
- Tania, N. E., Saputri, S. N., Yusniawaty, A. P., Nulpriyanti, A. W., Halim Mowavik, M. N., & Tri Nugraha, J. (2025). Kepuasan Mahasiswa dalam Berbelanja Online di Aplikasi e-commerce: Pendekatan Deskriptif Kuantitatif. *Jurnal ISO: Jurnal Ilmu Sosial, Politik Dan Humaniora*, 5(1), 14. <https://doi.org/10.53697/iso.v5i1.2521>