



Submitted:
1 October 2025
Revised:
20 November 2025
Published:
30 November 2025

CONTACT

Correspondence Email:
auliarahmi.putri2001@g
mail.com

Address: Jalan Prof. Dr.
Hamka, Padang,
Sumatera Barat, kode
pos 25132

KEYWORDS

Francis Bacon;
Knowledge is Power;
Inductive Method;
Epistemology; Social
Sciences

THE HISTORICAL TRACE OF FRANCIS BACON'S CONCEPT OF "KNOWLEDGE IS POWER" AND ITS RELEVANCE TO THE DEVELOPMENT OF SOCIAL SCIENCES

AULIA RAHMI PUTRI ¹, SITI FATIMAH², SYAFRI ANWAR³, AHMAD
NURHUDA ⁴

^{1,2,3} Pascasarjana Universitas Negeri Padang, ⁴ Universitas Islam
Negeri Imam Bonjol Padang

ABSTRACT

This article examines the historical traces and epistemological relevance of Francis Bacon's foundational concept, "knowledge is power", to the development of Social Sciences. This study addresses need to understand the philosophical roots of modern social inquiry and its implications for contemporary educational practice. This research uses a qualitative approach with a historical and philosophical literature study method. The data sources consist of Francis Bacon's major works, including *The Advancement of Learning*, *Novum Organum*, and *The New Atlantis*. Data analysis was utilized using content analysis techniques with stages of data reduction, concept grouping, and theoretical synthesis. The results demonstrate that Bacon's thought about knowledge established a critical framework emphasizing empiricism, inductive reasoning, and the systematic deconstruction of cognitive biases. which significantly contributed to the formation of social studies methodology through the use of empirical data and a problem-solving orientation. Ultimately, these findings confirm that Bacon's epistemology remains highly relevant in the 21st century, particularly in fostering inquiry-based learning, problem-based learning, and critical literacy to develop students who are analytical, reflective, and capable of navigating complex social dynamics.

I. INTRODUCTION

The development of modern science is intricately linked to the epistemological paradigm shift that emerged at the dawn of European modernity, specifically during the 17th century, known as the Scientific Revolution (Sušac & Ruf, 2024). During this period,

there was a fundamental shift from the medieval scholastic tradition, which was previously anchored in textual authority and theological doctrine, toward a rational and empirical approach that prioritized observation, experience, and systematic verification as the basis for acquiring knowledge (Nikolov, 2024; Sušac & Ruf, 2024). This paradigm shift established the foundation for the emergence of the modern scientific method and propelled the advancement of science in general. This epistemological transformation not only influenced the natural sciences but also structured the framework for the development of the social sciences, enabling an understanding of human and social reality in a more systematic and empirically grounded manner (J. Huang, 2024; Jiménez-Buedo & Russo, 2021).

A central figure in this paradigm shift was Francis Bacon (1561–1626). Through his works, most notably *Novum Organum*, Bacon introduced a scientific methodology rooted in observation and empiricism, while critiquing the various obstacles to objective thinking that he termed "idols" (Abadi, 2024; Anggara dkk., 2023). Bacon asserted that true knowledge is acquired through systematic observation and experimentation, which are then synthesized into general conclusions. His famous principle, "knowledge is power," reflects the belief that knowledge has a transformative function in understanding and mastering reality (Müller-Merbach, 2005; Ugwu, 2024). This concept subsequently exerted a broad influence on scientific perspectives, including in the social sciences, which establish social facts, empirical data, and rational analysis as the foundation for interpreting societal dynamics and transformation. In Social Sciences, this scientific paradigm is reflected in efforts to analyze social phenomena critically and contextually (Anggara dkk., 2023; Setianingsih, 2019).

Although Francis Bacon's thought has been extensively examined within the fields of philosophy and history of science, studies specifically investigating the relevance of Bacon's thinking to the development of the epistemology of Social Sciences remain relatively limited. Most scholarship tends to discuss Bacon in a general scientific context, without explicitly articulating his connection to the epistemological and methodological construction of the Social Sciences. Conversely, various studies indicate that SSC learning in schools continues to be dominated by a rote-learning approach oriented toward factual mastery, thereby failing to foster student engagement or the development of critical and analytical thinking skills (Lailiyah dkk., 2023; Putri dkk., 2025; Salamah, 2024). This condition illustrates a discrepancy between the idealized objectives of social studies as a means of cultivating critical citizens and the empirical reality of classroom instruction.

Based on this background, this article aims to examine Francis Bacon's thought through a systematic literature review of his seminal works and to identify the epistemological relevance of the "knowledge is power" concept for the advancement of the Social Sciences. Through a historical-philosophical literature review approach, this article intends to offer a theoretical contribution to enriching the understanding of Bacon's position within the history of social science, while simultaneously emphasizing its significance for the development of a contemporary epistemological framework for social studies.

II. METHODS

This study employs a qualitative approach with a historical-philosophical literature review model to examine Francis Bacon's epistemological thought and its relevance to the development of the Social Sciences. This approach was selected to facilitate an in-depth analysis of the texts, ideas, and intellectual context related to inductive methods, empiricism, and the critique of cognitive obstacles (idols of the mind) as formulated in Bacon's works. The research data sources comprise both primary and secondary literature. Primary literature includes Bacon's seminal works—particularly *The Advancement of Learning* (1605), *Novum Organum* (1620), and *The New Atlantis* (1627)—which serve as the primary objects of textual analysis. Secondary literature includes scientific journal articles, academic books, and proceedings discussing Baconian thought, the Scientific Revolution, epistemology, and the evolution of the social sciences, providing material for interpretation, contextualization, and analytical reinforcement. The selection of literature is based on criteria of thematic relevance, academic credibility, and publication quality. Contemporary literature from the last decade is prioritized, though classic works are included due to their foundational significance to the subject matter. Data collection was conducted through documentary studies using systematic searches of academic databases such as Google Scholar, DOAJ, and Portal Garuda, followed by a screening process to ensure alignment with the research focus. Data analysis was executed using content analysis with a thematic and conceptual approach. The analytical stages included: (1) data reduction to isolate key ideas related to Baconian epistemology and the "knowledge is power" maxim; (2) categorization and interpretation of these ideas within the historical and philosophical context of Bacon's thought; and (3) conceptual synthesis to bridge the analysis with the epistemological foundations of the social sciences. Through these stages,

this study generates a theoretical interpretation of Francis Bacon's contribution to the advancement of social science and its contemporary relevance to social studies education.

III. RESULT AND DISCUSSION

Historical Traces and Philosophical Foundations of Francis Bacon's Concept of "Knowledge is Power"

The concept of "Knowledge is Power" by Francis Bacon emerged during the European Renaissance, a phase of intellectual awakening that signaled a fundamental paradigm shift in human understanding. The Renaissance period in Europe (14th to 16th centuries) marked a profound intellectual revival that transformed the existing paradigm of knowledge and established the cornerstone of modern philosophy (Purba dkk., 2025). The shift from the dominance of ecclesiastical authority and the scholastic tradition toward a rational and empirical approach was characterized by humanism, which emphasized human agency in the construction of knowledge (Wang, 2024). The rediscovery of classical literature, the invention of the printing press, and global exploration during the Age of Discovery expanded access to information and catalyzed new scientific inquiries that formed the foundation of the Scientific Revolution. Francis Bacon (1561–1626) emerged as a pivotal figure by advocating for inductive methodology, systematic observation, and experiential learning as the basis of knowledge, thereby affirming the principle that knowledge is a strategic instrument for understanding and mastering reality (Anggara dkk., 2023; Dani & Salminawati, 2022). Bacon's ideas, coupled with the Renaissance spirit, fostered the development of modern social sciences with an empirical, critical, and systematic orientation, one of which was the concept of "Knowledge is Power."

The concept of "Knowledge is Power" was first formulated by Francis Bacon in 1597 through the expression *scientia potestas est* or *ipsa scientia potestas est* in *Meditationes Sacrae* (García, 2001; Wildner, 2015). In the early stages, this expression retained theological nuances, as Bacon placed knowledge as an extension of divine omnipotence (Peltonen, 1996). However, as his thought matured, this concept transformed into an epistemological principle emphasizing that the empirical investigation of nature must yield practical benefits for human welfare. Consequently, the idea that "knowledge is power" represents a revolutionary transition from a theological framework to a modern scientific foundation, serving as a catalyst for a scientific spirit that prioritizes empirical research, problem-solving, and the capacity of knowledge to transform both the natural and social worlds (Remmling, 2022). Since its formulation, this concept has been continuously reinterpreted

by various thinkers, from Hobbes to Foucault, to elucidate the dynamic relationship between knowledge and power.

Francis Bacon did not limit himself to the normative assertion that "knowledge is power," but instead developed a comprehensive philosophical system to facilitate the realization of this principle. This foundation rests upon three primary pillars: the teleological purpose of knowledge, the implementation of a new scientific methodology, and the critique of human cognitive impediments.

a. The Purpose of Knowledge

Human Utility and Progress where Bacon emphasized that true knowledge must be utilitarian, providing tangible benefits to enhance the quality of human life (Anggara dkk., 2023; Widiyastono, 2021). Within this framework, knowledge is not conceived as a purely contemplative activity, but as a mechanism for generating innovation and progress (Zagorin, 2002). This vision is embodied in the concept of "Active Philosophy," which seeks the mastery of nature through an understanding of its governing laws. In *Novum Organum* (1620), Bacon states, "Human knowledge and human power meet in one... Nature to be commanded must be obeyed," demonstrating that the potency of knowledge resides in its capacity to facilitate effective action and human advancement.

b. The New Scientific Method

The inductivism and empiricism introduced by Francis Bacon constituted pivotal milestones in the history of scientific methodology, offering a rigorous alternative to the Scholastic deductive reasoning that dominated the Middle Ages. In *The Advancement of Learning* (1605), Bacon critiqued the tendency of the Scholastic tradition to prioritize metaphysical speculation over empirical investigation. He asserted that the advancement of knowledge could only be realized if inquiry was anchored in experience and the direct observation of natural phenomena. This position was reinforced in *Novum Organum* (1620), where Bacon formulated the inductive method as a systematic scientific procedure—progressing from the collection of empirical data and the compilation of tables of presence and absence to the eventual formulation of general axioms. Bacon's inductive methodology was designed to minimize groundless speculation, ensuring that scientific knowledge was derived from facts validated through controlled experimentation (Jardine, 2000). Consequently, this new scientific method sought to displace syllogistic logic as the primary instrument for discerning truth.

The relevance of Baconian empiricism is increasingly prominent in contemporary scholarship. A number of studies demonstrate that the inductive approach possesses the capacity to provide an objective framework for addressing real-world problems, as sensory experience is positioned as the primary source of knowledge formation (Anggara dkk., 2023; Setianingsih, 2019). In modern pedagogy, this paradigm serves as the foundation for experiential learning practices, where conceptual understanding is constructed through direct interaction with phenomena (Muthia dkk., 2024). Thus, *Novum Organum* constitutes not only a critique of Scholastic deductive reasoning but also a methodological cornerstone for the development of modern science and data-driven approaches to knowledge.

c. Critique of Human Cognitive Barriers

In *Novum Organum* (1620), Francis Bacon identified the Four Idols as the source of various intellectual errors that obstruct the attainment of valid knowledge. Bacon characterized the Idols of the Tribe (*Idola Tribus*) as universal human predispositions that tend to project false patterns onto reality; the Idols of the Cave (*Idola Specus*) as individual biases arising from personal backgrounds, dispositions, and experiences; the Idols of the Marketplace (*Idola Fori*) as linguistic ambiguities stemming from social discourse and everyday communication; and the Idols of the Theater (*Idola Theatri*) as fallacious systems of thought resulting from the dogmatic acceptance of traditional authority or philosophical paradigms (Urbach & Gibson, 1994). This formulation demonstrates that the pursuit of scientific truth must be accompanied by efforts to eliminate cognitive impediments inherent in the human condition.

The relevance of Baconian thought is increasingly apparent in contemporary research. A number of studies identify analogous patterns of bias in modern academic practice, ranging from confirmation bias to overreliance on initial data (anchoring bias), which continue to influence the processes of reasoning and educational innovation (Amelia dkk., 2025). Scholarship asserts that the structures of bias described by Bacon persist within social research methodology, particularly in the manner researchers interpret data and construct scientific arguments (Bijak dkk., 2014). Consequently, Bacon's critique of cognitive barriers is not only historically significant but also provides a conceptual foundation for modern scientific practices that demand intellectual rigor, empirical verification, and a critical orientation toward unconscious biases (Anggara et al., 2023).

The evolution of these ideas reached its systematic culmination in *Novum Organum*, where Bacon formulated the inductive method as a "new instrument" (*novum organum*) for the acquisition of knowledge. This methodology emphasizes three primary stages, empirical observation, experimentation, and generalization, as the essential pathway toward scientific conclusions. This approach explicitly rejects Scholastic deductive logic, which Bacon deemed inadequate for the advancement of modern science. One of his most significant contributions was the assertion that knowledge only yields "power" when it is liberated from cognitive biases and epistemological impediments. Consequently, the maxim "Knowledge is Power" transcends mere rhetoric; it established the philosophical foundation for the modern scientific method, positioning knowledge as an instrument for human empowerment and the rational mastery of reality.

Bacon's Position in Intellectual History

Francis Bacon's thought occupies a strategic position in Western intellectual history, marking a paradigmatic shift from the medieval Scholastic tradition to a modern epistemology rooted in empiricism and inductive methodology. Through *Novum Organum*, Bacon critiqued the dominance of deductive reasoning reliant on textual authority and proposed a scientific approach grounded in observation, experience, and experimentation as the requisite foundation for acquiring knowledge (Anggara dkk., 2023; Gaukroger, 2001). This transformation not only catalyzed the development of the natural sciences but also laid the groundwork for the emergence of systematic research methodologies within the social sciences.

During the 17th-century Scientific Revolution, Bacon served as the architect of a methodological vision that bridged the gap between medieval Scholasticism and modern thought. His ideas shifted the locus of truth from the authority of classical texts to the primacy of empirical experience, while simultaneously asserting that the validity of knowledge is contingent upon its utility for the betterment of human life (Zagorin, 2002). In his utopian work *The New Atlantis*, Bacon envisioned a proto-model of collective research institutions that subsequently inspired the establishment of modern scientific organizations, most notably the Royal Society (Çelenk & Sürdem, 2021; Mbusa, 2021).

Bacon's position also existed in critical dialogue with Continental rationalism, most notably that of René Descartes. Although he prioritized sensory experience, Bacon's inductivism did not constitute a naïve empiricism; rather, it necessitated the rational processing of empirical data through systematic classification and inductive generalization

(Setianingsih, 2019). This epistemological framework subsequently became the foundation for the development of modern scientific traditions, including the Social Sciences, which prioritize data-driven inquiry, a critical posture toward established authority, and a teleological orientation of knowledge toward the resolution of societal challenges

The Relevance of Bacon's Concept of "Knowledge is Power" in the Development of Social Sciences

Francis Bacon critiqued traditional natural philosophy—which was predominantly speculative and deductive—arguing that it remained ensnared in unproductive dialectics and was overly dependent on the authority of classical predecessors. To elucidate the connection between Bacon’s conceptual framework and the foundational principles of the Social Sciences, a mapping of Baconian ideas onto the methodological structures and scientific practices of the social sciences as a rigorous discipline is presented.

Table 1
Baconian Concepts and Their Relevance to the Epistemological Foundations of Social Sciences

Baconian Concepts	Basic Principles	Implementation in Social Sciences
Empiricism	Knowledge is derived through empirical observation and experience	Objectivity within the Social Sciences is constructed upon empirical evidence, encompassing both quantitative and qualitative data, which reflects social facts, thereby ensuring that research does not rely exclusively on subjective opinion or normative doctrine.
Systematic Inductive Method	The generalization of knowledge is constructed incrementally through the systematic collection and taxonomic classification of empirical facts.	Research within the Social Sciences initiates with the systematic observation of social phenomena, followed by data collection and analysis to discern specific patterns; these patterns subsequently serve as the foundation for theorization, as exemplified by the grounded theory methodology.

Experiments and Interventions	Knowledge is attained through systematic interrogation of reality, using planned experimental protocols.	In Social Sciences, although not always confined to a laboratory setting, the experimental approach is operationalized through measurable field experiments to test the causal relationships between social variables.
Criticism of Idols (Idols of the Mind)	Efforts to identify and mitigate cognitive bias and prejudices in the thinking process	In Social Sciences, this principle is operationalized through researcher reflexivity, specifically, an awareness of one's own positionality, the influence of cultural biases, and a sustained critical attitude towards concepts, terminologies, and theoretical framework that are frequently accepted without validation.
Knowledge is Power	Knowledge possesses strategic agency because it empowers humanity to decode the complexities of reality and exercise rational control over social processes	Within the Social Sciences, knowledge functions as an instrument to diagnose systemic social issues, critique entrenched power structures, and formulate policy interventions and social actions directed toward the advancement of equity and structural change.
Collective Effort	Scientific progresses are achieved through collaboration and the division of intellectual labor	Social Sciences evolve through the work of scientific communities involving collaboration between researchers, peer-review mechanisms, research replication, and the accumulation of collective knowledge that remains transparent and subject to critical falsification.

According to Bacon’s thought of speculative and deductive knowledge, being ensnared in sterile dialectics and an over-reliance on the authority of classical

predecessors, failed to yield tangible benefits for the human condition. In its stead, Bacon advocated for operative knowledge—an epistemological framework designed to comprehend, govern, and enhance the lived experience. His seminal dictum, "knowledge and human power are synonymous," underscores his conviction that authentic knowledge is not merely an object of abstract contemplation, but a pragmatic instrument for transformation (Stehr, 2023). In this framework, the concept of "knowledge is power" is understood as the ability of human capacity to master natural forces for the collective welfare, an idea that later expanded into the sociopolitical sphere.

To actualized this form of knowledge, Bacon formulated a systematic inductive methodology in his work, *Novum Organum*, as a replacement for Aristotelian logic (Organon) (Stehr, 2023). This method transcends mere casual observations, but requires a structured process, beginning with the collection of facts, the compilation and grouping of data (categorized by the presence, absence, and degree of variation of phenomena). Through the process of elimination to isolate fundamental causes, knowledge is constructed gradually from concrete data to general conclusions, or a "bottom- up," as opposed to the deductive approach that starts from abstract principles.

The fundamental difference between the traditional paradigm of knowledge and the Baconian paradigm is evident in the objectives, methods, and sources of scientific authority (Bacon, 1878). While traditional knowledge aims at contemplation and justification of old authorities through deduction, the Baconian paradigm places knowledge as a means of material progress and improvement in the quality of human life through empirical induction. Nature is no longer viewed as a passive object of contemplation, but rather as a source of facts that must be studied systematically in order to be understood and utilized responsibly.

Bacon's influence on the Social Sciences resides not in the literal replication of laboratory protocols typical of the natural sciences, but in the adoption of his spirit and methodological framework. The principle of empiricism articulated by Bacon serves as an important foundation of Social Sciences, namely the view that knowledge must be sourced from experience and observable facts. In practice, SSC studies social phenomena through observation, surveys, statistics, and fieldwork, which serve as modern forms of empirical fact-gathering. furthermore, Bacon emphasized the importance of systematic research procedures to mitigate the limitations of human perception subjective bias (Anggara dkk., 2023). This principle is operationalized within Social Science methodology, which requires clear research design, the precise formulation of variables, and the implementation of

measurable data collection and analytical techniques. Furthermore, the inclusion of validity and reliability testing. The entire process aims to produce scientifically sound conclusions that are academically accountable.

The concept of idols of the mind introduced by Bacon remains profoundly relevant within modern social research. Idols of the Tribe encompass universal cognitive biases; the Idols of the Cave represent to the researcher's personal background and experience; the Idols of the Market concern linguistic distortions and conceptual ambiguities; and the Idols of the Theater address the dogmatic acceptance of theory (B. Huang, 2023). Awareness of the existence of these various "idols" encourages social scientists to be reflective and critical in order to maintain the objectivity of their research.

In the Social Sciences, the concept that "knowledge is power" has expanded in meaning. Social knowledge serves not only to describe reality, but also to analyze social problems and encourage change. Social research is directed toward understanding inequality, power relations, and the dynamics of social transformation, providing the basis for public policy, advocacy and social empowerment. Thus, knowledge acts as a tool for transformation toward a more just and prosperous society.

However, Bacon's legacy is not without criticism. He is often viewed as a symbol of the Enlightenment who emphasized the mastery of nature through science. However, Adorno and Horkheimer in "Dialectic of Enlightenment" highlight that Bacon's instrumental rationality can devolve into domination and alienation. In this view, science, originally intended to be liberating, becomes a tool of oppression and exploitation, as reflected in the ecological crisis and modern capitalism (Merchant, 2006; Omodeo, 2021). Ecofeminist critiques further argue that Bacon's rhetoric regarding the mastery of nature legitimizes the dual exploitation of both the environment and women (Omodeo, 2021). Additionally, the Western dualistic epistemology that separates the subject from the object of knowledge fosters a mindset of human dominion over nature, contributing significantly to environmental degradation. Consequently, the complexity of social reality, rich in meaning, historical context, and human subjectivity, demands qualitative and interpretive approaches to complement positivistic, inductive methods

Thus, it can be asserted that the social sciences possess a strong epistemological foundation rooted in the Baconian revolution of thought. Although its methods and approaches have evolved and undergone significant refinement, the commitment to systematic empiricism, a critical stance toward prejudice, and an orientation toward empowering knowledge remain at the core of the social science tradition. Understanding

these epistemological roots is essential to affirming the position of the social sciences as a rigorous scientific discipline, rather than merely a pedagogical practice.

IV. CONCLUSION

This study concludes that Francis Bacon's concept of "knowledge is power" serves as a foundational pillar in the modern epistemological shift from scholasticism toward scientific methods rooted in empiricism and induction. This paradigm shift significantly influenced the emergence of social science disciplines and their respective methodological frameworks. Through a literature-based approach, the findings demonstrate that Bacon's view of knowledge as a utilitarian instrument for human progress is directly relevant to the objectives of social science education—specifically its orientation toward scientific inquiry, critical literacy, and evidence-based problem solving. In an educational context, the "knowledge is power" framework supports strategies that foster critical thinking, such as inquiry-based and problem-based learning; these methods have been shown to enhance social analysis skills and a reflective awareness of social realities. Ultimately, this study confirms that Baconian epistemology remains a vital reference for social studies theory and pedagogical implementation in the modern era, where knowledge is positioned not merely as information, but as a transformative force for student empowerment and social engagement.

REFERENCES

- Abadi, M. A. (2024). Filsafat Francis Bacon Dalam Konteks Pendidikan Seni. *Journal of Educational Research and Humaniora (JERH)*, 16–19. <https://doi.org/10.51178/jerh.v2i3.2204>
- Amelia, T. F., Susanti, R., Maharani, S. D., & Anwar, Y. (2025). Mengatasi Bias Kognitif dalam Pengambilan Keputusan untuk Meningkatkan Inovasi Pendidikan. *Jurnal Sosial Humaniora Dan Pendidikan*, 4(2), 49–57. <https://doi.org/10.55606/inovasi.v4i2.3954>
- Anggara, R., Khoiriyah, N., Masrurroh, S., Ainuttaqiyyah, G., & Nasikhin, N. (2023). Menganalisis Pemikiran Francis Bacon (Pemikiran Empirisme): Biografi Francis Bacon, Pemikiran filsafat empirisme Francis Bacon, dan Sinergitas pemikiran filsafat Francis Bacon dalam pendidikan Islam. *Wildan: Jurnal Pendidikan Dan Pengajaran - STAI Bani Saleh*, 2(2), 16–27. <https://doi.org/10.54125/wildan.v2i2.24>
- Bacon, F. (1878). *Novum organum*. Clarendon press.
- Bijak, J., Courgeau, D., Franck, R., & Silverman, E. (2014). Are the four Baconian idols still alive in demography? *Revue Quetelet Journal*, 2(2), 31–59. <https://doi.org/10.14428/rqj2014.02.02.02>
- Çelenk, A., & Sürdem, Ş. S. (2021). Representations generated independently of the object: Bacon's "The New Atlantis." *IDA: International Design and Art Journal*, 3(1), 39–53.

- Dani, S. M., & Salminawati. (2022). Perkembangan Filsafat Dan Sains Pada Zaman Renaissance. *Journal of Social Research*, 1(5), 328–333. <https://doi.org/10.55324/josr.v1i5.80>
- Gaukroger, S. (2001). *Francis Bacon and the transformation of early-modern philosophy*. Cambridge University Press.
- Huang, B. (2023). Study of Francis Bacon's "Four Illusions" from a Psychological Perspective. *International Journal of Education and Humanities*, 8(3), 97–99. <https://doi.org/10.54097/ijeh.v8i3.8393>
- Huang, J. (2024). Application of Natural Science Methods in Social Science Research. *Science, Technology and Social Development Proceedings Series*, 2, 132–138. <https://doi.org/10.70088/mk1of430>
- Jiménez-Buedo, M., & Russo, F. (2021). Experimental practices and objectivity in the social sciences: Re-embedding construct validity in the internal–external validity distinction. *Synthese*, 199(3), 9549–9579. <https://doi.org/10.1007/s11229-021-03215-3>
- Lailiyah, A. N., Simbolon, M. E., & Hermawati, E. (2023). The Effect Of Somatic, Auditory, Visual And Intellectual Models (Savi) Toward Critical Thinking Ability. *Indonesian Journal of Elementary Teachers Education*, 4(2), 74–82. <https://doi.org/10.25134/ijete.v4i2.8854>
- Mbusa, S. Y. (2021). Paradoks "Knowledge Is Power" Dan Bencana Kemanusiaan Tinjauan Filosofis Menurut Pemikiran Sir Francis Bacon. *Aggiornamento*, 2(01), 15–32. <https://doi.org/10.69678/aggiornamento20115-32>
- Merchant, C. (2006). The Scientific Revolution and the Death of Nature. *Isis*, 97(3), 513–533. <https://doi.org/10.1086/508090>
- Müller-Merbach, H. (2005). Francis Bacon's praise: Knowledge, the source of power. *Knowledge Management Research & Practice*, 3(1), 45–46.
- Muthia, E., Reynaldhi, N., Margolang, P. A., & Syahputra, H. (2024). Peran Pengalaman dalam Pembentukan Pengetahuan: Perspektif Filsafat Empirisme. *Mauriduna: Journal of Islamic Studies*, 5(3), 1093–1103. <https://doi.org/10.37274/mauriduna.v5i2.1354>
- Nikolov, P. (2024). Authority and Scientific Paradigms. *IJFMR - International Journal For Multidisciplinary Research*, 6(5). <https://doi.org/10.36948/ijfmr.2024.v06i05.28988>
- Omodeo, P. D. (2021). Bacon's Anthropocene: The Historical-Epistemological Entanglement of Power, Knowledge and Nature Reassessed. *Epistemology & Philosophy of Science*, 58(3), 149–170. <https://doi.org/10.5840/eps202158350>
- Purba, A. A. B., Hasibuan, F. N., Ramadhan, M. R., & Salminawati, S. (2025). Menyingkap Jejak Renaisans: Transformasi Pendidikan dan Ilmu di Dunia Islam. *MUDABBIR Journal Research and Education Studies*, 5(1), 277–283. <https://doi.org/10.56832/mudabbir.v5i1.673>
- Putri, H. I., Alqindy, K. K., Nabilah, L., & Anggraini, S. K. P. (2025). Development of Problem-Based Learning Strategies to Deepen Elementary School Students' Understanding of Social Studies Concepts. *COMPETITIVE: Journal of Education*, 4(2), 97–106.
- Remmling, G. W. (2022). Francis Bacon and the French Enlightenment philosophers. Dalam *Towards the Sociology of Knowledge (RLE Social Theory)* (hlm. 47–59). Routledge.

- Salamah. (2024). Efforts To Improve The Quality Of Social Science Learning With The Learning Community Model. *International Conference on Aplied Social Sciences in Education*, 1(1), 524–527. <https://doi.org/10.31316/icasse.v1i1.6934>
- Setianingsih, Y. (2019). Induktivisme-Empirisisme Francis Bacon dan Relevansinya Bagi Ilmu-Ilmu Keagamaan. *Indonesian Journal of Islamic Theology and Philosophy*, 1(2), 157–178. <https://doi.org/10.24042/ijitp.v1i2.4930>
- Stehr, N. (2023). Social Scientific Knowledge About Knowledge And Information. *Epistemology & Philosophy of Science*, 60(3), 131–170.
- Sušac, M., & Ruf, V. (2024). Scientific Revolution. *Zdravstveni Glasnik*, 10(2), 186–192.
- Ugwu, A. F. (2024). Francis Bacon's Theory of Knowledge: An Appraisal. *ScienceOpen Preprints*. <https://doi.org/10.14293/PR2199.001230.v1>
- Wang, J. (2024). Reformation hermeneutics and the spirit of humanism. *HTS Teologiese Studies/Theological Studies*, 80(3), 9783.
- Widiyastono, M. H. (2021). Utilitarianisme dalam Praktik Kehidupan Prososial Manusia. *Al-Ihath: Jurnal Bimbingan dan Konseling Islam*, 1(1), 18–26. <https://doi.org/10.53915/jbki.v1i1.112>
- Zagorin, P. (2002). *Francis Bacon and the Transformation of Early-Modern Philosophy*.