

## An Analysis of Epistemology Implementation through Critical Thinking in the Modern Era



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**ABSTRACT:** Critical thinking is a major discourse that often goes unnoticed, especially when society faces a contemporary phenomenon that insists on immediate understanding and absolute truth. The study analysis discusses the relevance and urgency of implementing critical thinking skills based on the epistemological approach necessary for all modern society. Diverse challenges and possibilities in the modern era require the skills of critical thinking. The aim is to prepare society to face these diverse challenges and approach new possibilities made in everyday life in the modern era. A descriptive qualitative approach, involving a comprehensive literature review of official documents, reference books, websites, government policies, and scholarly articles related to the research topic, was used in this study. From the results of the study on the topic above, it can be concluded that the cultivation of critical thinking, grounded in epistemological principles, is imperative. Critical thinking and epistemic cognition are no longer exclusive to Academics, but hostically become fundamental needs for everyone in modern society.

**KEYWORDS:** Epistemology, Critical Thinking, People, Education, Modernity

### INTRODUCTION

Knowledge can simply be recognized as the comprehension of the human world, including both theoretical and practical understanding. Human knowledge about the next world is not merely related to existential meaning; however, through knowledge, humans can elevate themselves to higher levels of civilization. Richard Pieters in his book entitled *Ethics and Education* (1966) argued that knowledge is the foundation of art or skills that can change a person's life (Winch & Gingell, 1999). This means that through knowledge humans, at the same time, can overcome their weaknesses and can find a way out of every problem faced by humans, such as adversity.

Artificial intelligence has been widely used to ease human's work. However, aside from that, human dependence on AI may actually weaken humans' ability to think critically and find solutions (Vargas-Murillo et al., 2023). The concern about AI dependency arises when AI services such as chat gpt provides answer findings in a relatively short time span. The convenience offered and provided by AI mainly leads to user comfort.

The search for knowledge through critical thinking requires epistemic cognition. Epistemic cognition presupposes not only how someone finds and uses knowledge but it also provides validation theories and claims can be categorized as either mere beliefs lacking logical support or as knowledge that has been rigorously established. The difference between knowledge and belief lies in the demand for the validity of truth in knowledge, whereas belief does not require the validity of its claims (Bernecker & Pritchard, 2011). Epistemic cognition is a cognitive process that enables individuals to differentiate between well-founded knowledge and mere belief or doubt (Greene & Yu, 2015). In other words, when someone acknowledges something, it presumes that the belief is true.

Research conducted by Jeffrey A. Greene and Seung B. Yu entitled "Educating Critical Thinkers: The Role of Epistemic Cognition" (2016) shows that epistemic cognition influences academic outcomes, including critical thinking skills and argumentation in the 21st century. Heidi Hyytinen, Katariina Holma, Auli Toom, Richard J. Shavelson and Sari Lindblom-Ylänne published the results of research entitled "The Complex Relationship Between Students' Critical Thinking and Epistemological Beliefs in the Context of Problem Solving" (2014). This research explores the relationship between critical thinking and epistemological beliefs in specific problem-solving situations. The findings in this research show that students' epistemological beliefs are closely related to critical thinking as a tool to (1) Enhance understanding and (2) determine truth and error. Based on these findings, students were classified into one of two qualitative profiles, (1) deep processing and (2) shallow processing. Referring to these two studies, the scope of analysis of this study begins with the relevance and urgency of implementing critical thinking skills based on epistemic cognition as the need for modern society.

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## **METHOD**

The method used in this analysis is qualitative. This method was chosen because it aims to determine how to search, collect, process and analyze data from the results of the analysis descriptively. Data was collected through a literature review of official documents, reference books, websites, government policies, and relevant journals. The aim of studying documents or texts is to examine the readability level of a text or to determine the level of achievement of understanding of a particular topic in a text. In this study, the author tries to analyze how the zoning system policy is implemented in education. The data taken in this study is from various sources and research results relevant to the subject topic. Data is collected through manual or digital reference searches. The results of the study begin with the relevance and urgency in the application of critical thinking in the modern era, especially when critical thinking skills have an important role in human attempts to acquire knowledge and understand the validity of knowledge logically as well as epistemological approaches which are related to the development of critical thinking skills.

## **RESULTS AND DISCUSSION**

In the modern era, some developments in technology and information encourage humans to continue to approach life's complexities with a critical mind. Epistemology, as a branch of philosophy that considers the sources, limits, and validity of knowledge, plays an important role in helping individuals to filter information and use logical understanding. The implementation of epistemology through critical thinking in the modern era is very important to face the challenges of complex information and cognitive biases. This ability must evolve through education, discussion and reflection, so that individuals can make wise and rational decision makings.

### **1. Face of Modernity**

There are many ways for humans to free themselves from various kinds of difficulties. There are also many endeavors made to create a lot of change. The face of modernity today is the implication of all forms of creative and innovative human action. This is in line with the definition of culture in British culturalism. Culture is "the best things that have been thought and said by humans" (the best that has been thought and said), as well as "learning about perfection" (the study of perfection), basically, culture is an effort to sophisticate personal life (Sugiharto, 2023).

The current face of modernity in all its forms is capable of producing various technology-based discoveries. This of course has a very good impact on humans. As in utilitarianism, apart from feeling the meaningful impact, each individual has the motivation to pursue other pleasures (benefits, utility) and avoid pains. The pain here can be understood as difficulties (Sugiharto, 2023). Therefore, the existence of a development, is to overcome difficulties.

The latest developments and discoveries in science, technology and industry create a harmonious situation, in their motivation to sophisticate life and escape from difficulties, such as endeavors to free humans from the elements of suffering. However, without realizing it, it actually has a side effect that gives pressure on humans. There is a view stated that the dominance of science and capitalism are the dominant elements which empower the face of modernism. One modern view which is objectivistic and positivistic tends to degrade humans into objects of machine engineering led to mass dehumanization.

Advancement of technological industry is a product of human ratios, or a product of the increasingly rapid science. Development. However, this development leads to quite multi-bias effects and tendencies. Instead of improving life and escaping difficulties, in reality humans have become objects empowered to maximize industrial development. Therefore, the ability to think critically is challenged to question whether the development of human reason has so far succeeded in bringing humans closer to certain truths or, on the contrary, it has pushed them away.

The advancement of science and technology provides great opportunities for industries to utilize innovation and turn it into a product. Aspects of life are changing based on the market. Instead of offering "convenience", what we should be aware of is that this convenience actually produces a dependent human nature. Ratios are externalized, explored, and accumulated to transform reality into a product that can be easily consumed by humans. Reality, while inherently complex, can be distilled into usable forms for human application (Hartanto, 2007).

Behind modern life realities, humans increasingly become production machines to keep industry running and maximize markets. The competition between industries to be dominant or even participate in this mechanism is contributing to dependence and deterioration of human life. This ethic of competition in controlling material resources is also the dominant behavioral pattern of individuals, nations and modern companies (Sugiharto, 1996).

### **2. Epistemology as the Foundation for Critical Thinking**

The term "epistemology" is composed of the Greek words "epistemai," meaning knowledge, and "logos," signifying discourse or reason (Sudarminta, 2002). Epistemology is not only an approach to knowledge. Epistemology also contains the study of methods and limitations for arriving at knowledge (Bernecker & Pritchard, 2011). This approach to knowledge actually questions the position of humans as subjects and the world in which they live as objects. Humans as subjects try to grasp and understand on how the world works. The results of human investigation are classified as knowledge.

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Based on Plato's view (427 BC-347 BC), knowledge is claimed as 'knowledge' if it contains three aspects: justification, truth and reliability (Moser, 2002). The justification aspect presupposes that knowledge is a premise that must be proven logically. Through empirical investigation, including observation, experimentation, and analysis, knowledge is legitimate. In other words, knowledge is not based on personal opinion or speculative beliefs that lack evidence to be justified. The fact that knowledge proven by the empirical and logical aspects, the validity of knowledge is trustworthy.

Within the framework of epistemic truth, whether knowledge is true or false depends on the extent to which the knowledge can be proven and explained and the explanation has use value for humans (Moser, 2002). The sun rises from the east and sets in the west is an empirical fact that can be proven logically. Therefore, knowledge about the rotation of the sun from east to west is a valid and reliable truth. According to Descartes (1596-1650) knowledge must always have a connection between reason and reality 'outside' (Sugiharto, 1996). The certainty of knowledge can only be based on the existence of an unchallengeable explanation which Descartes defined it as evidence (Sugiharto, 1996).

Knowledge that comes from experience is still very likely to fall into error. In the history of epistemology, the sources of knowledge that deserve to be called classical sources and the best candidates are perception, memory, consciousness and reason (Moser, 2002). However, this view can fall into error if you include experience as a source of knowledge. In fact, every operation of the mind in human consciousness can be called an experience. In other words, reason, as a source of knowledge, requires experience (Moser, 2002).

Other thinkers such as John Locke (1632-1704), Berkeley (1685-1753) and David Hume (1711-1776) were classified as empiricist thinkers who defended sensory experience as a source of knowledge. Because in sensory experience, reality appears as it is (Muthmainnah, 2018). Even though Hume was a true empiricist, he rejected the principle of causality in observational activities as the source of knowledge. Clearly, Hume argues that the principle of causality has no logical and objective ground (Pranowo, 2024). For Hume, the cause-and-effect relationship above cannot be concluded deductively. Hume dismissed the principle of causality owing to its susceptibility to error and alternative possibilities.

Endeavors to think critically by questioning and evaluating all information or phenomena can cultivate a relativistic disposition. The position of relativism implies that all truth of information or phenomena is relative to the individual who believes it or even that all interpretations, theories or evaluations have an equal level of truth (Hyytinen et al., 2014). Although critical thinking possesses the potential to relativize all knowledge claims, it is essential to recognize that its fundamental objective, rooted in epistemic cognition, is not to undermine the existence of absolute truth. In other words, critical thinking does not navigate someone to a pessimistic dialectic that there is no truth without verify the truth or knowledge as it remains relevant.

### **3. Critical Thinking as an Approach to Knowledge**

Critical thinking necessitates the comprehensive application of various types of knowledge (Hyytinen et al., 2014). This implies a reciprocal relationship between critical thinking, knowledge, and epistemology. In other words, individuals must possess knowledge and understanding of a phenomenon or information before they can provide critical justifications or evaluations. It is, of course, only possible to critique and evaluate constitutional law with adequate knowledge of constitutional law. Therefore, knowledge is a crucial aspect of conceptualizing critical thinking (Hyytinen et al., 2014).

In essence, epistemological beliefs serve as the premise for critical thinking. Epistemological beliefs can be understood as an individual's views about the nature of knowledge and the process of knowing (Hyytinen et al., 2014). Students with adaptive epistemic dispositions and beliefs are more likely to apply the epistemic cognition skills necessary for critical thinking, argumentation, conceptual understanding, and academic performance. To fundamentally address this concern, critical thinking should be viewed as a disposition to suspend judgment and avoid accepting information as absolute truth. Through critical thinking, individuals recognize the need for competing arguments to determine the validity of claims in the world (Carl Patterson, 2020).

Critical thinking is an attitude that involves thoughtful consideration of issues and topics within a person's experiences. It is both the understanding of investigative methods and the ability to apply logical reasoning. In this regard, critical thinking always demands an effort to continuously explore and test beliefs or forms of knowledge that are considered true based on evidence that supports their conclusions (Fisher, 2011). Simply put, critical thinking, as a form of logical reasoning, allows us to determine whether a person's statement denies another or produces a new one. Thus, we can ascertain whether that statement is true or false.

Critical thinking should not be viewed as an endeavor to cultivate a pessimistic awareness by relativizing knowledge and truth. Instead, by understanding critical thinking as a method for identifying, evaluating, and finding connections among various statements, we are better equipped to uncover the truth within those statements. Therefore, critical thinking extends beyond cognitive activities to encompass the practical application of making decisions.

Carl Patterson (2020) categorizes critical thinking approaches as logical reasoning and scientific reasoning. Logical reasoning facilitates the process of using facts and conditions as premises to formulate a new understanding. Critical thinking is inherently tied to logical reasoning, ensuring the validity of claims and arguments. Scientific reasoning, frequently used by scientists to support or reject hypotheses through experimentation, is prevalent in natural sciences. However, it is also utilized in social sciences such as sociology and anthropology.

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The stage of testing the validity of a theory, claim, statement, or knowledge also requires falsification. The principle of falsification asserts that a theory, claim, or knowledge is useful if it can be proven false, not merely through the process of verifying its truth. Popper's proposed falsification for testing the validity of theories, claims, or knowledge assumes that all three are open, dynamic systems with the potential to be replaced by new theories, claims, or knowledge. In the application of critical thinking, Popperian falsification helps us to avoid accepting a theory, claim, or knowledge at face value.

### **4. Epistemology and Critical Thinking in the Modern Era**

In this century, rapid advancements in industry and science have led to constant and swift changes. Numerous cutting-edge innovations have emerged, fostering new ideas and motivations that drive further industrial development (Setiawan, 2022). Modernity has created a manipulative consciousness among people, leading to a perception that the current state of affairs is inevitable and natural (Sugiharto, 2023).

Such an assumption reflects a manipulated consciousness. The factors contributing to this decline, as previously discussed, have resulted in increased human dependencies. For instance, the rise of automation, exemplified by Artificial Intelligence, has led to a decline in critical thinking, as individuals are more likely to passively consume information. Moreover, social media, where information is readily available, is often perceived as an infallible source of truth, bypassing critical analysis. This reality highlights the detrimental impact of modern advancements on human cognition, as the ease and convenience provided by modern technology erode critical thinking abilities.

Critical thinking is highly needed. It refers to an individual's capacity to analyze, evaluate, and formulate thoughts in a logical and rational manner. A significant challenge facing humanity in the modern era is the cultivation of effective critical thinking skills. Every individual must navigate an increasingly complex, interconnected, and expansive world. Critical thinking is a reflective process of assessing information and making judgments. A critical thinking disposition is a relatively stable psychological trait that influences how individuals respond to various types of information.

Education plays a crucial role in developing human capital and preparing individuals for increasingly complex situations. For instance, in the educational setting, various foundational methods guide learners in cultivating critical thinking skills, such as distinguishing between truth and falsehood and determining how to acquire accurate information. Essentially, individuals require a rational basis for their beliefs, whether it is derived from validated knowledge or any special reasons to believe in something.

### **RECOMENDATION**

Within an educational context, this epistemological perspective enables individuals to comprehend how knowledge is acquired, utilized, evaluated, and validated or invalidated. This is crucial in today's information-rich environment, where information can be diverse, misleading, and even contradictory. An epistemological understanding empowers individuals to critically assess information and construct sound arguments (Utomo et al., 2024).

The necessity of critical thinking is evident. The proliferation of information and communication technologies has resulted in an information overload, leaving individuals with insufficient time and resources to process this data into knowledge. This has led to cognitive overload and a narrowing of perspective (Watimena, 2023). The ease with which information can be accessed through artificial intelligence has fostered a tendency to accept information at face value, often due to the very term "artificial intelligence" implying inherent validity. Critical thinking is essential to counteract this tendency, as it requires individuals to evaluate information provided by artificial intelligence using established knowledge and methodologies to determine its actual validity. Epistemology, the study of knowledge, emphasizes that information should not be accepted uncritically but rather should be rigorously examined and evaluated to ascertain its validity. Through an epistemological lens, individuals are encouraged to reflect upon, process, and evaluate how information is acquired and its degree of validity (Utomo et al., 2024).

Every human being inherently has free will, the capacity to act, choose, and determine. Free will and conscience are often considered the primary parameters enabling individuals to exercise their freedom responsibly (Moeliono & Simanjuntak, 2024). Technology must be aligned with values that are either intrinsic or contextually relevant to human life. This is to mitigate the gap between the actual social implications of technology and the desired social implications (Marin & Steinert, 2022). The proverb "I am what I eat" expresses the notion that our actions and choices significantly shape our identity. Technological advancements have facilitated unprecedented control over human lives, but this power can be misused if individuals lack self-control.

At critical thinking level, it becomes very likely to act in response to a situation. In this context, taking action to respond to something is part of human cognitive abilities, driven by a desire for certainty, regardless of the foundation upon which this desire rests. This involves assessing the validity of claims, and determining whether something is truly true or false (Bernecker & Pritchard, 2011). This response aligns with skepticism, which involves suspending judgment about the truth or falsity of a claim and questioning it initially. Skepticism offers significant benefits beyond the realm of pure theory. The suspension of judgment is a direct result of a questioning attitude, and it is a rational response to a situation (Bernecker & Pritchard, 2011).

Modern life, particularly in urban settings, has become so intertwined with technological advancements that individuals often experience a profound sense of confusion. Indeed, there is a growing concern about the decline in critical thinking skills and basic competencies among the current generation. Critical thinking offers a practical approach to re-evaluating the fundamental values



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of urban dwellers who have been significantly impacted by the adverse effects of technology. This practical approach is not rigid or dogmatic but rather aims to provide a pragmatic framework for participating in the shaping of social values. In essence, critical thinking is about forming judgments, making decisions about what to believe or do, and what to reject or avoid.

Critical thinking is increasingly understood and practiced as an invaluable tool for character building, providing a solid foundation for competence, especially in the face of digital transformation. Individuals possessing strong critical thinking skills and are able to utilize them effectively, enjoy a significant advantage over those who are indifferent or apathetic. Critical thinkers are better equipped to avoid cognitive biases and make wise use of technological advancements. By negotiating the choices and values associated with new technologies, critical thinking empowers individuals to think objectively and rely on reasoning skills.

### CONCLUSION

Advancements in science, technology, and industry are the result of human endeavors to overcome challenges and enhance the quality of life. Human innovation and creativity have yielded products that simplify daily life and alleviate burdens. Modernization, as reflected in various new discoveries, has created more efficient systems, such as automation and instant technology, providing significant benefits to human life. However, this progress has also brought about unforeseen negative consequences. Reliance on technology and industrial systems has increased, while society has become subject to the dominant capitalist system. In this context, the importance of critical thinking in addressing the impacts of technological advancement and modernization becomes evident. Critical thinking, which involves the ability to analyze, evaluate, and formulate thoughts logically, is an essential skill in the modern era.

Obtaining information must be examined through a process of evaluation and verification before being accepted as valid. In the context of development, cultivating critical thinking skills is essential to equip individuals with the ability to process information and make sound decisions. Furthermore, a skeptical attitude, characterized by suspending judgment and questioning information before accepting or rejecting it, is a necessary step to prevent cognitive errors. Overall, critical thinking is not only a tool for addressing technological challenges but also a means of developing a character capable of shaping values and making informed decisions in daily life.

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