

# Intercorrelational Relationship Of The Components Of Critical Thinking Development In Students

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**Received:** 31 July 2025; **Accepted:** 28 August 2025; **Published:** 30 September 2025

**Abstract:** The article examines students' critical thinking through the lens of its core components — logical, creative, communicative, and constructive thinking. The essence of the correlational interrelations among these forms of thinking is revealed. It is substantiated that the full-fledged development of students' critical thinking requires ensuring the harmonious interaction of all its components.

**Keywords:** Education, critical thinking, logical thinking, creative thinking, communicative thinking, constructive thinking, correlational interrelation, harmony.

**Introduction:** In global educational processes, special attention is paid to improving the system for training competitive personnel capable of adapting to complex socio-economic and cultural transformations, as well as of making sound and alternative decisions in problem situations through the development of students' critical thinking. Within the framework of UNESCO's Sustainable Development Goals, the Education 2030 Declaration identifies the task of "building a solid foundation of knowledge for every learner and developing creative and critical thinking through collaboration," for which systematic work is being carried out [1]. In particular, a priority area is the development of students' critical thinking, the formation of intellectually mature and socially active individuals, the enhancement of social responsibility, and the consistent introduction of innovative teaching methods and approaches into practice.

Addressing this urgent pedagogical problem requires identifying correlational interrelationships between the main components of critical thinking and other forms of thinking (logical, creative, communicative, and constructive). This is due to the fact that an individual's critical thinking cannot develop in isolation, detached from other forms of thinking. According to S. L. Rubinstein, every thought process, in its internal structure, represents an action or activity aimed at solving a specific task [2].

T. Hauchman defines critical thinking as "one of the basic forms of mental activity, a strategy for finding the

right path to solving any problem; it includes hypotheses, analyses, and reflective actions (based on information processing, analytics, verification, control, and evaluation), embraces a diversity of opinions and, at the same time, presupposes the ability to express one's own position, as well as the capacity to objectively assess the results of both one's own and others' activities" [3].

From the above definitions it follows that, in essence, critical thinking develops in an inseparable interrelationship with other forms of thinking. The correlational conditioning of these interrelationships will be elaborated below.

**1. The relationship between critical and logical thinking.** Logical thinking is a system of concepts, judgments, and inferences governed by the laws and rules of logic that emerge in the course of consciously understanding tasks. Moreover, logical thinking functions as a form of thinking whose essence is determined by operations based on the laws of logic: forming concepts, constructing arguments and conclusions, as well as comparing and correlating knowledge with actions [4].

In analysis and argumentation, critical thinking relies on the laws of logical thinking. Logical thinking ensures the correctness of inferences and the soundness of decisions made. Their correlational interrelationship lies in the fact that critical thinking, by using the instruments of logical thinking (deduction, induction, analogy), evaluates information. If logical thinking

serves as a kind of “skeleton,” then critical thinking fills that skeleton with content and context. In other words, logic answers the question “How can a conclusion be drawn?”, whereas critical thinking asks “Should this particular conclusion be drawn?” The former guarantees form and process; the latter—content and quality.

From the foregoing, it becomes clear that, in thinking, the processes of deriving conclusions from arguments (logical thinking) and evaluating those arguments in terms of their reliability, context, and consequences (critical thinking) invariably complement one another. Therefore, their relationship should be viewed not as “parallel tracks,” but as an interlinked, feedback-driven system. For example, a student analyzes a scholarly article. Logical thinking uncovers causal relationships among the arguments, while critical thinking scrutinizes the method, data quality, the author’s assumptions, and possible alternative interpretations. As a result, logic functions as the instrument of analysis, and critical thinking as the quality filter. Their correlation consists in the fact that the finer and more sensitive the filter, the more reliable the outcome of the logical construction proves to be.

Critical thinking shapes the ability to uncover logical fallacies, whereas logical thinking codifies the formal rules of inference. For example, avoiding the neglect of inductive constraints when deriving a general law from a statistical result is a manifestation of logical discipline; the ability to restrain a psychological bias such as “I more often notice the result I like” is evidence of critical vigilance. The joint functioning of these two forms of thinking significantly reduces error rates.

In conclusion, logical thinking is a mechanism for deriving conclusions, whereas critical thinking serves as a control system that ensures the quality and substantive significance of those conclusions. Their correlation is not a simple sum but a mutually reinforcing synergy: logic makes critique consistent, and critique lends logic substance and credibility. Thoughts formed in such harmony prove not only theoretically sound but also safe and effective for practical decision-making.

## **2. The relationship between critical and creative thinking.**

Human thinking is a complex, multifaceted phenomenon in which creativity and analyticity complement each other and, when in balance, deliver the highest results. “Creative thinking is the ability to create the new and generate non-standard ideas” [5]. It takes a person beyond existing patterns, opening a space of new possibilities through various associations and combinations. Critical thinking, in turn, is the

process of testing, evaluating, and adapting these possibilities to practice. It examines the logical coherence of ideas, the soundness of arguments, and their fit with available resources and conditions.

The correlation between creative and critical thinking is manifested in the alternation of divergent (expanding the range of ideas) and convergent (narrowing the search for a solution) processes. First, creative thinking generates a variety of options; then critical thinking filters them, selecting those that are most well-founded and useful. When these two processes operate together, they ensure both novelty and reliability.

This interrelationship is especially evident in educational and research contexts. For example, in a seminar session, students first freely present a stream of ideas—at this stage there is no evaluation or criticism. At the next stage, the criteria of critical thinking are applied: ideas are assessed in terms of the strength of their arguments, their realism, and their social and ethical implications. In this way, creative designs undergo a process of “maturation” and become viable and effective solutions.

A disruption of their correlation leads to two different situations. If creative thinking predominates over critical thinking, a multitude of theoretically vivid but practically inapplicable ideas arises. Conversely, the excessive dominance of critical thinking suppresses the creative process, hindering the emergence of new ideas. Therefore, the optimal balance can be characterized as “cautious boldness”—a harmony of creative breadth and critical precision.

In conclusion, creative thinking is the “engine” that opens new paths, whereas critical thinking is the “control system” that ensures the correct choice of direction. Their harmony forms the basis of effective thinking, prompting a person not only to create something new but also to implement it responsibly in practice. In such unity, thought becomes not only original but also well-founded and robust.

## **3. The relationship between critical and communicative thinking.**

Human thinking is not merely a collection of ideas that arise and remain within an individual’s inner world. It is always formed, developed, and evaluated in the process of interacting with others. “Communicative thinking is the ability to be aware of a thought, express it, and exchange it effectively with others; in doing so, language, culture, context, and communication strategies play an important role” [6]. Critical thinking, in turn, tests, evaluates, and refines the ideas, arguments, and conclusions that emerge in this communicative process, relying on logical, evidentiary, and objective criteria.

The correlation between these two forms of thinking lies in the fact that critical thinking improves the quality of communication, while communicative thinking ensures the effectiveness of critique. If, in the course of communication, a thought is expressed unclearly or understood incorrectly, then the result of critical analysis will also prove unreliable. At the same time, critical thinking structures arguments and conclusions, giving them a clear and comprehensible form in communication. Thus, communicative thinking supplies critique with correct material, and critical thinking ensures its high-quality processing.

In educational and research settings, this correlation is especially evident. For instance, when analyzing a scholarly article, a student must first correctly understand the text and clearly grasp the author's main claim (communicative thinking). Only after that can they proceed to examine the strength of the arguments, the appropriateness of the method, and the validity of the results obtained (critical thinking). Finally, when presenting their own analysis, the student should maintain both argumentative rigor and the norms of scholarly communication.

If this harmony is disrupted, two types of negative situations arise. When communicative thinking is well developed but critical thinking is weak, communication yields only elegant statements devoid of substantive content. Conversely, when critical thinking is strong while communicative thinking remains weak, ideas are well founded but fail to reach the audience or are misinterpreted.

That is why the optimal result appears only in their balance: critical thinking makes communication substantive and well grounded, while communicative thinking makes it clear, respectful, and effective. Such a correlation guides a person not only toward being "right," but toward the joint attainment of truth with others. In a society where such harmony exists, ideas become not only correct and well argued, but also function as bridges, strengthen cooperation, and serve social progress.

#### **4. The relationship between critical and constructive thinking.**

Human thinking is a multifaceted process in which the stages of identifying a problem, analyzing it, and searching for a solution consistently complement one another. In this context, critical thinking is the ability to analyze a situation in depth, evaluate evidence, detect errors, and make decisions that are as close to the truth as possible. "Constructive thinking is the ability to solve identified problems effectively and practically, to develop new solutions, and to implement them in real life" [7]. Their correlation lies in the fact that critical

thinking provides constructive thinking with a clear and reliable "map of the problem," whereas constructive thinking turns the results of critical analysis into tangible solutions.

Critical and constructive thinking, when operating together, ensure high performance. First, critical thinking uncovers the true causes of a problem, eliminates faulty assumptions, and tests the available evidence. This process serves as a solid foundation for constructive thinking. At the next stage, constructive thinking, drawing on this foundation, develops a practical plan, generates new ideas, and determines optimal ways to use available resources. Thus, one ensures the correct formulation of the problem, and the other—its effective solution.

A disruption of this harmony leads to two negative outcomes. If critical thinking is highly developed but constructive thinking remains weak, the analysis proves impeccable, yet practical solutions are lacking—this state can be characterized as "analysis paralysis." Conversely, when constructive thinking is strong but critical thinking is weak, quick solutions are produced, but they are insufficiently substantiated and may prove ineffective in the long term.

Their coordinated functioning is especially important in education and practical activity. Thus, when working on a research project, a student first, through critical thinking, analyzes the topic in depth, evaluates sources, and formulates the problem clearly. Then, with the help of constructive thinking, they design the project, test it in practice, and, if necessary, refine it. This process is carried out cyclically, resulting in a solution that is both theoretically substantiated and practically effective.

#### **CONCLUSION**

In conclusion, it should be emphasized that the correlation between constructive and critical thinking reflects the most productive state of human thought. Critical thinking defines the problem clearly and on solid grounds, whereas constructive thinking develops real pathways to its solution. When such harmony is present, the solutions produced are not only correct, but also effective, sustainable, and socially significant.

On the basis of the analysis conducted, it can be asserted that critical thinking functions as the "central hub" among all forms of thinking. It draws from logical thinking its sequence and rigor; from creative thinking—novelty and a flow of ideas; from communicative thinking—clarity and a culture of expression; from constructive thinking—practical solutions. In this process, the forms of thinking mutually complement one another, forming a synergy: strengthening one increases the effectiveness of the

others, while weakening one reduces the overall result. With such harmony, human thought becomes not only theoretically well-calibrated and logically consistent, but also creative, clear, practical, and socially meaningful for decision-making. Consequently, the development of critical thinking is not merely the formation of a single competence, but the improvement of the entire system of thinking—the harmonization of all facets of human intelligence.

These findings imply that, in improving the pedagogical system for developing students' critical thinking, attention must also be paid to the development of other forms of thinking, since this proves to be a crucial pedagogical and psychological aspect of achieving the stated goal. Moreover, in our study, these very forms of thinking are identified as the main components of the development of critical thinking in students. This, in turn, becomes key to forming in them an integrated system of thinking.

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