IMPROVING CRITICAL THINKING AND CREATIVITY AMONG SCHOOL STUDENTS

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Abstract: In an era defined by rapid technological advancement and complex global challenges, the ability to think critically and creatively has become more essential than ever for school students. This article examines the nature of critical thinking and creativity as foundational skills that prepare young learners for academic success, future careers, and responsible citizenship. Critical thinking involves analyzing facts, questioning assumptions, evaluating evidence, and making logical decisions, while creativity refers to generating novel ideas, approaching problems from fresh perspectives, and expressing originality. Despite their importance, these skills are often underdeveloped in traditional school curricula that prioritize memorization over deep thinking. This article provides a detailed explanation of both skills, followed by practical exercises that teachers can implement in the classroom to foster each ability. Additionally, the article offers evidence-based recommendations for schools and educators to systematically improve critical thinking and creativity among students. The article concludes that integrating these skills into daily instruction not only enhances learning outcomes but also empowers students to become independent, innovative thinkers. **Keywords:** critical thinking, creativity, school students, problem-solving, innovation, higher-order thinking, active learning, student engagement

Introduction

Education systems around the world have long emphasized the transmission of knowledge. Students are taught to memorize dates, formulas, definitions, and rules, and then tested on their ability to recall this information accurately. While factual knowledge remains important, it is no longer sufficient for success in the twenty-first century. The world today is characterized by an overwhelming flow of information, rapid changes in technology, and complex problems that do not have simple, predetermined answers. In this environment, what students truly need is not just information but the ability to think for themselves. They need to question what they see and hear, evaluate evidence before forming conclusions, and generate original solutions to novel challenges. Two skills stand out as particularly vital in this regard: critical thinking and creativity.

Critical thinking and creativity are often described as higher-order thinking skills. Unlike rote memorization, which involves passive reception of information, these skills require active mental engagement. Critical thinking pushes students to move beyond accepting things at face value; it encourages them to ask why, to compare different sources of information, to identify logical flaws, and to construct well-reasoned arguments. Creativity, on the other hand, pushes students to move beyond repeating existing ideas; it encourages them to imagine alternatives, to combine concepts in unexpected ways, and to produce something new and meaningful. Together, these two skills form a powerful combination. Critical thinking ensures that creative ideas are grounded in reality and logic, while creativity ensures that critical thinking leads to innovation rather than mere criticism.

Unfortunately, many schools unintentionally suppress critical thinking and creativity. Heavy reliance on textbooks, standardized tests, and teacher-centered lectures leaves little room for questioning, exploration, or original expression. Students learn that there is always one correct answer and that their job is simply to find it. Over time, they become afraid of making mistakes or offering

unconventional ideas. This article argues that such an approach is outdated and harmful. It is possible, and indeed necessary, to redesign classroom activities and assessment methods so that critical thinking and creativity become central goals of education. The following sections will explain these two skills in depth, offer concrete exercises for developing them, and provide practical recommendations for educators who wish to transform their teaching practice.

What Are Critical Thinking and Creativity?

Critical Thinking is the disciplined process of actively analyzing, synthesizing, and evaluating information gathered from observation, experience, reflection, reasoning, or communication. It is not simply being negative or finding fault with everything. Rather, it is the art of thinking about thinking. A critical thinker does not accept claims or conclusions automatically but asks probing questions. These questions include: What is the source of this information? Is the evidence reliable? Are there hidden assumptions? What alternative explanations might exist? Does the conclusion follow logically from the evidence? Critical thinking involves several sub-skills, including identifying biases, distinguishing facts from opinions, recognizing logical fallacies, and making reasoned judgments. In a school context, a critically thinking student does not simply repeat what the textbook says but compares different sources, notices inconsistencies, and forms independent conclusions. Critical thinking also involves metacognition, which means being aware of one's own thinking processes and recognizing when one might be making an error. For example, a student who realizes that they believe something only because their friends believe it is already practicing a form of critical thinking.

Creativity is often misunderstood as a mysterious talent that only a few people possess, such as artists or inventors. In reality, creativity is a universal human ability that can be learned and strengthened through practice. Creativity is the process of generating ideas, solutions, or products that are both original and valuable. Originality means that the idea is new or unusual in a given context.

Value means that the idea works, solves a problem, or has meaning. Creative thinking involves divergent thinking, which is the ability to produce many different ideas in response to an open-ended question. It also involves convergent thinking, which is the ability to combine ideas or select the best solution from many possibilities. In school settings, creativity can be expressed in many ways: writing a unique story, finding an unusual method to solve a math problem, designing an experiment to test a hypothesis, or suggesting a new way to organize the classroom. Importantly, creativity requires a safe environment where students are not afraid to take risks or make mistakes. Many students stop being creative because they fear being laughed at or getting a low grade. True creativity also often involves combining knowledge from different subjects. For example, a student might use artistic skills to explain a scientific concept, or use storytelling to present historical events. Thus, creativity is not separate from academic learning but is a powerful way to deepen it.

The relationship between critical thinking and creativity is often misunderstood. Some people believe that critical thinking limits creativity because it involves judgment and evaluation. However, the opposite is true when the two skills are used properly. During the initial stages of creative work, judgment should be suspended to allow many ideas to flow freely. This is called brainstorming. Once a range of ideas has been generated, critical thinking becomes essential to evaluate which ideas are most promising, to identify weaknesses, and to refine the product. In other words, creativity produces raw material, and critical thinking shapes it into something useful. A student who can both imagine novel possibilities and rigorously test them is exceptionally well prepared for any future challenge. Therefore, schools must aim to develop both skills together, not one at the expense of the other.

Exercises for Improving Critical Thinking

One effective exercise for developing critical thinking among school students is the daily news analysis activity. In this exercise, the teacher brings a short news article or a video clip to class, preferably one that presents a controversial or debatable issue appropriate for the students' age level. Students are asked to read or watch the material carefully, but instead of simply summarizing it, they must answer a set of probing questions. These questions include: Who wrote or created this message? What evidence is provided to support the claims? Is there any missing information that would be important to know? Do the conclusions follow logically from the evidence? Can I think of another explanation for the same facts? Students then share their answers in small groups before a whole-class discussion. The teacher's role is not to give correct answers but to model good questioning and to challenge students when they accept weak evidence. Over time, students internalize these questions and begin to ask them automatically whenever they encounter new information. This exercise can be repeated weekly with different types of texts, including advertisements, social media posts, and even textbook passages, thereby training students to be habitually critical consumers of information.

Another powerful exercise is called the "mystery scenario." The teacher presents a short, puzzling scenario that has no obvious explanation. For example, a man is found dead in a room with a puddle of water and broken glass. What happened? Students must work individually or in small groups to generate as many possible explanations as they can. Then, they must evaluate each explanation based on logic and available clues. They can ask the teacher yes-or-no questions to gather more information, but the teacher only answers truthful questions. Gradually, students eliminate impossible explanations and narrow down to the most logical one. In the example above, the answer might be that the man was a fish whose bowl broke (the water and broken glass). This kind of exercise forces students to think hypothetically, evaluate evidence, avoid jumping to conclusions, and revise their

thinking as new information arrives. It is highly engaging because it feels like a game, but it directly trains critical thinking sub-skills such as hypothesis testing, inference, and logical deduction.

A third exercise focuses on identifying logical fallacies in everyday language. The teacher prepares a list of short statements or arguments that contain common logical fallacies, such as ad hominem (attacking the person instead of the argument), bandwagon (arguing that something is true because many people believe it), or false cause (assuming that because one event followed another, it was caused by it). Students are asked to identify what is wrong with each argument and to rewrite it correctly. For younger students, this can be done with simple examples. For older students, real examples from commercials, political speeches, or social media comments can be used. This exercise not only sharpens critical thinking but also protects students from manipulation in their daily lives.

Exercises for Improving Creativity

A classic and highly effective exercise for developing creativity is the "alternative uses" task. In this exercise, the teacher presents an ordinary everyday object, such as a paperclip, a plastic bottle, a brick, or an empty cardboard box. Students are given a limited amount of time, such as five to ten minutes, and are asked to list as many different uses for that object as they can think of. The key rule is that there are no wrong answers, and students should not judge their own ideas during the brainstorming phase. They are encouraged to think of wild, funny, or seemingly impossible uses as well as practical ones. For example, a paperclip could be used not only for holding papers together but also as a zipper pull, an emergency lock pick, a bookmark, a tiny sculpture material, or even as a tool to reset electronic devices. After the brainstorming time ends, students share their lists with a partner or with the whole class. The teacher then asks them to choose the three most

original ideas and explain why they are creative. This exercise trains divergent thinking, fluency (generating many ideas), flexibility (shifting between different categories of uses), and originality. When done regularly, students become more comfortable with thinking outside obvious categories.

Another excellent exercise for fostering creativity is the "story chain" or "circle story" activity. The teacher begins by reading or stating a single opening sentence for a story, such as "The last thing Leo expected to find inside the old library book was a key." Then, the first student adds one sentence to continue the story. The next student adds another sentence, and so on around the classroom. No student is allowed to criticize or reject what a previous student said; the rule is always "yes, and" rather than "no, but." This forces students to accept unexpected twists and build upon others' ideas, which is exactly how real creative collaboration works. The story often takes surprising and humorous directions, which makes the activity enjoyable. After several rounds, the teacher reads the complete story aloud. Variations include having students write one sentence on a piece of paper, fold it so the next person cannot see the previous sentence except for the last few words, and then continue. This exercise develops narrative imagination, verbal creativity, spontaneous thinking, and the ability to combine unrelated elements into a coherent whole.

A third creativity exercise involves redesigning everyday objects or systems. The teacher asks students to think of something that annoys them or could be improved. This could be the school desk, the classroom layout, the way homework is collected, the design of a water bottle, or even the school timetable. Students are then asked to imagine that they are designers with unlimited resources. They must draw or write a description of their new design, explaining how it solves problems that the existing version has. For example, a student might redesign a school backpack to include a built-in phone charger, a rain cover, and compartments that open from both sides. Another student might redesign the school schedule to

include longer breaks for physical activity and creative projects. The key is that students are not simply criticizing but actively constructing positive alternatives. After they finish, they present their designs to classmates, who can ask questions and offer gentle suggestions for improvement. This exercise connects creativity to real-world problem-solving and shows students that their ideas matter.

Recommendations for Improving Critical Thinking and Creativity in Schools

To genuinely improve critical thinking and creativity among school students, schools and educators must move beyond isolated exercises and adopt a comprehensive, long-term approach. The following recommendations are based on educational research and successful practices from around the world.

First, teachers should redesign their daily questioning strategies. Instead of asking closed questions that have only one correct answer, such as "What is the capital of France?" teachers should ask open-ended questions that require reasoning and imagination. Examples include "What might have happened if the French Revolution had failed?" or "How many different ways can you think of to measure the height of this building using only a ruler and a mirror?" When students answer, teachers should follow up with further questions: "Why do you think that?" "What evidence supports your view?" "Can you think of a counterexample?" This kind of Socratic dialogue trains students to think deeply and to justify their ideas. It also signals that the classroom values thinking over simple recall.

Second, assessment methods must change. If students are graded only on multiple-choice tests that measure memorization, they will quickly learn that critical thinking and creativity do not matter. Schools should include performance-based assessments, such as projects, portfolios, presentations, and problem-solving tasks. For example, instead of a test on a history unit, students could be asked to research a historical controversy, evaluate conflicting sources, and write a reasoned argument. Instead of a math test focused on formulas, students could be asked to

design a budget for a class event, explaining their reasoning and considering multiple variables. Rubrics for these assessments should include criteria for critical thinking (such as use of evidence, logical consistency, identification of assumptions) and creativity (such as originality, flexibility, elaboration). When students know that these skills will be evaluated, they invest more effort in developing them.

Third, schools should allocate time specifically for project-based learning. In a traditional schedule, each subject is taught in isolation, and students move from one class to another without making connections. Project-based learning reverses this by presenting a complex, real-world question or challenge that requires knowledge from multiple subjects. For example, students might be asked to design a sustainable garden for the school grounds, which requires biology (what plants grow well together), mathematics (measuring area and calculating costs), art (designing a visually pleasing layout), and language arts (writing a proposal to present to the school administration). Over several weeks, students work in teams, conduct research, generate creative solutions, test their ideas, receive feedback, and revise their work. Throughout this process, they naturally practice both critical thinking (evaluating information, solving logistical problems) and creativity (imagining original designs, finding unique solutions). The teacher acts as a facilitator, guiding students when they are stuck but allowing them to struggle productively.

Fourth, classroom culture must be intentionally shaped to encourage risk-taking and to reduce fear of mistakes. Many students stop thinking creatively because they are afraid of being wrong or looking foolish. Teachers can address this by modeling their own mistakes and showing how they learn from them. They can also establish clear norms, such as "every idea is welcome during brainstorming" and "we critique ideas, not people." When a student offers an unusual solution that does not work, the teacher should praise the effort and guide the student to analyze

why it did not work and what could be changed. Failure should be reframed as data, not as a judgment of ability. Over time, students become more willing to take intellectual risks, which is the foundation of both critical thinking and creativity.

Fifth, professional development for teachers is essential. Many teachers themselves were educated in traditional, memorization-focused systems and have never been taught how to foster critical thinking and creativity. Schools should provide ongoing training, workshops, and peer coaching to help teachers learn new instructional strategies. Teachers can observe each other's classrooms and share successful activities. They can also collaborate to design interdisciplinary projects. Without teacher training, even the best recommendations will not be implemented effectively.

Sixth, schools should involve parents and the wider community. Parents can be invited to workshops where they learn about the importance of critical thinking and creativity, and how to support these skills at home. For example, parents can be encouraged to ask their children open-ended questions during dinner conversations, to play board games that require strategy and problem-solving, and to limit passive screen time in favor of creative activities such as drawing, building, or writing. Community members, such as engineers, artists, scientists, and entrepreneurs, can be invited to speak to students about how they use critical thinking and creativity in their work. Such connections show students that these skills are not just school exercises but are valuable in the real world.

Finally, schools should reduce the pressure of standardized testing. While some accountability is necessary, excessive testing narrows the curriculum and forces teachers to focus on test preparation rather than deep thinking. Schools and policymakers should advocate for balanced assessment systems that include performance-based measures and that allocate time for project-based learning,

discussion, and exploration. Countries such as Finland, which have less emphasis on standardized testing and more emphasis on student-driven learning, consistently produce students with strong critical thinking and creative abilities. There is no reason that other schools cannot follow this example.

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