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Quality of Education in Pakistan: Critical Thinking, Logical Reasoning and Mathematical Ability in Crisis

By

Dr. Ghulam Ghouse¹

The opinions expressed in this article are those of the author and do not necessarily reflect the views of the organization.

¹ Associate Director, Research, School of Management Sciences, Beaconhouse National University, Lahore

Traditionally, education has been the foundation of resilience and intellectual independence of civilization, as well as progressive social change. Nevertheless, it was Muslim societies that were at the forefront of scientific, philosophical, mathematical, and epistemological development, especially during the Islamic Golden Age (8th -14th centuries), due to their pedagogical ethos that promoted logic, inquiry, and intellectual practicality.

The contemporary learning science echoes these classical insights. However, the modern evidence is presented in the form of national and international evaluation batches, according to which the Pakistani educational system is losing this intellectual tradition. Despite the increased enrolment, the quality of learning has declined, and studies have repeatedly identified three fundamental cognitive deficits: weak critical thinking, loss of logical thinking, and decline in mathematical ability. Such failures are structural, and they are founded on pedagogical practices, design of assessment, curricular design, and budgetary allocation.

Education has been universally accepted as the most effective tool of human development, the platform on which a country forms its economic strength, social fabric, and democracy. However, in Pakistan, the fifth-most populous state in the world, this base is being severely structurally dismantled. In 2025, Pakistan was ranked in 168th position out of 193 countries on the Human Development Index (UNDP, 2025)². According to UNICEF³ The Pakistan Economic Survey 2024-25 indicates that the proportion of public expenditures on education has decreased to a minimum of 0.8 percent of GDP, a historic low that is way below the UNESCO and SDG-4 target of 4 to 6 percent. There is virtually no room in the budget to reform the curriculum, train teachers, or even to purchase learning materials, with almost 90 per cent of that amount of money going to the salary of the teacher.

The National Education Policy Development Framework 2024⁴ suggests that in Pakistan, only 5-percent of children get access to education of acceptable quality, and only 12-percent of youth who are eligible have access to higher education. Such numbers are an indicting curse of a system that places more emphasis on enrolment figures rather than actual education. The challenge of the decade has become quality rather than access.

This policy paper dwells on the three cognitive competencies that constitute the basis of quality education: critical thinking, logical reasoning, and lack of mathematical skills. It looks at the structural, pedagogical, and institutional influences that are corrosive to each of them. The analysis is based on the possible evidence that is available and leads to effective action policy interventions. There are three key pillars:

Pillar I: Dilution of Critical Thinking

According to Scriven and Paul (2020)⁵ critical thinking is “*the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action.*”

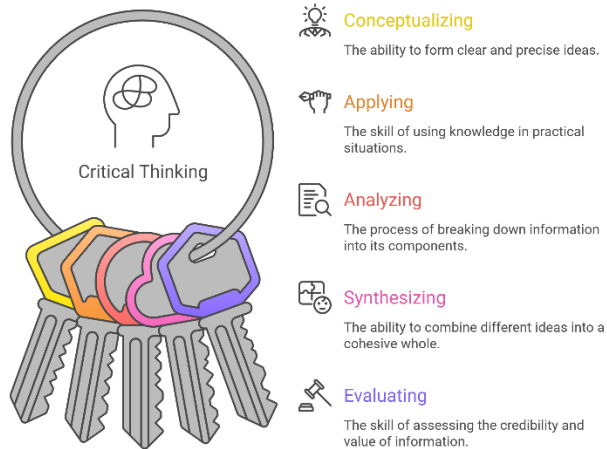
² [https://www.undp.org/pakistan/press-releases/human-development-progress-slows-35-year-low-according-undps-2025-human-development-report#:~:text=The%202025%20HDR%20places%20Pakistan%20in%20the,0.838\)%2C%20bringing%20it%20closer%20to%20global%20trends.](https://www.undp.org/pakistan/press-releases/human-development-progress-slows-35-year-low-according-undps-2025-human-development-report#:~:text=The%202025%20HDR%20places%20Pakistan%20in%20the,0.838)%2C%20bringing%20it%20closer%20to%20global%20trends.)

³ <https://www.unicef.org/pakistan/education>

⁴ [https://pie.gov.pk/SiteImage/Publication/NEPDF%202024%20\(17.12.2024\).pdf](https://pie.gov.pk/SiteImage/Publication/NEPDF%202024%20(17.12.2024).pdf)

⁵ https://tdlc.ucsd.edu/GSLN/images/Defining_and_educating_critical_thinking.pdf

Foundations of Critical Thinking



Critical thinking is the ability to interpret information, arguments, make independent judgements, and challenge assumptions, which is the main building block in an effective citizenry and workforce. Its lack of presence in the educational life of Pakistan is, perhaps, the most widespread intellectual vacuum in the country. This failure is deeply rooted in the Pakistani classroom pedagogical culture. In general, the methods of teaching in the public and private schools have been narrowed down to what is locally referred to as “*sabaq-yaad*”, the memorization of the contents of the lessons as an end in itself. This educational model of transmission, where the teacher talks and the student listens without questioning, has become the popular form of teaching at all levels of education, starting with the primary school and undergraduate degrees.

The educational system that is accessible to broader sectors of society is wanting as far as imparting 21st century skills, such as critical thinking, decision-making skills, and conflict resolution skills, among others. Students are not able to think in a critical and creative manner, the same skills that are necessary for personal and professional growth⁶. Most of the government schools in Pakistan lacked adequate teachers, books, and classrooms, and the type of education that would stimulate critical thinking and creativity. Students were also driven towards rote learning and had no room to be curious and to reason⁷.

Pillar II: Failure of Logical Reasoning

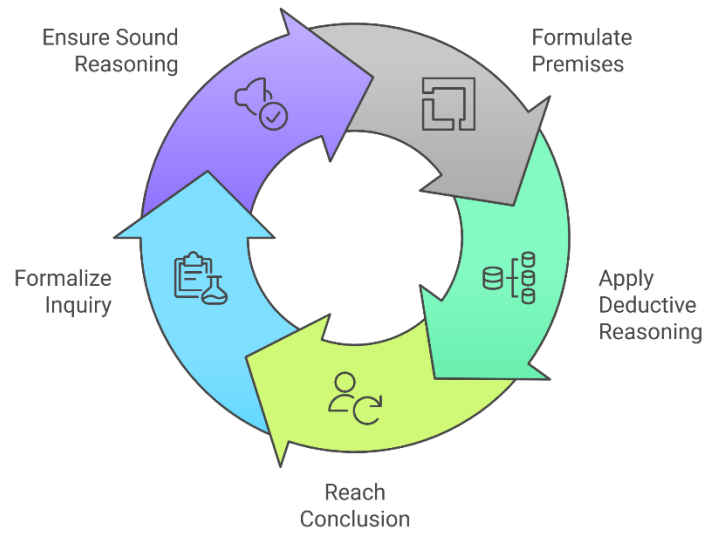
According to Aristotle, “*There is a system of logic, known as syllogistic logic, to help with the process of scientific inquiry. A syllogism is a logical argument that uses deductive reasoning to arrive at a conclusion based on two or more premises. This system of logic helped to formalize the process of scientific inquiry and ensured that conclusions were based on sound reasoning.*”⁸

⁶ <https://www.thefridaytimes.com/05-Sep-2024/pakistan-s-education-crisis-barriers-inequality-and-the-path-to-reform>

⁷ <https://thediomat.com/2025/08/pakistans-education-crisis/>

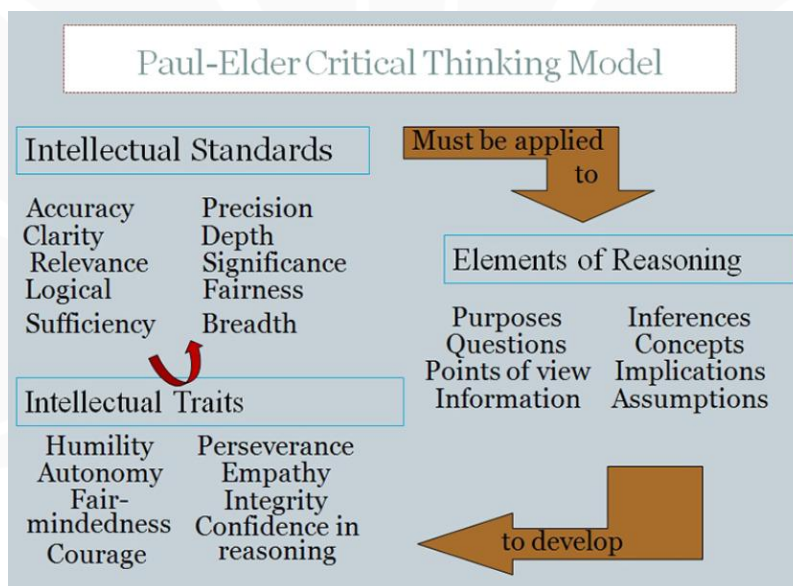
⁸ <https://louisville.edu/ideastoaction/about/criticalthinking/framework>

Syllogistic Logic Cycle



The focus on empirical observation, inductive logic, and logical analysis that Aristotle created formed the foundation of the scientific method, which continues to form the foundation of the knowledge-making process to date.

The support of all the advanced learning is logical thinking in the sense of the possibility to make valid inferences, see cause and effect, use systematic thinking, and solve problems by means of systematic reasoning. In its absence, students can acquire facts but still fail to relate, understand, and use them in new settings. In the education system in Pakistan, this ability is not only underdeveloped but it is also structurally inhibited.



Source: Paul and Elder (1997)⁹

⁹ https://www.criticalthinking.org/files/Concepts_Tools.pdf

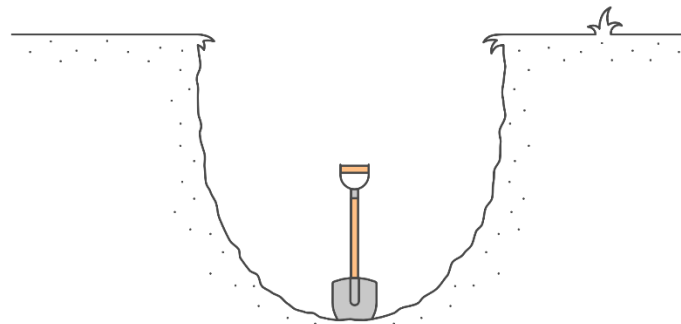
The impasse of logical thinking starts with the pedagogic level. The current system of the Pakistani educational paradigm is completely based on the lecture-based rote learning regime. It has a negative effect on the development of cognitive functions that are necessary to be able to operate logically. Such as hypothesis formulation, assumption scrutiny, evidence evaluation, and the subsequent revision of conclusions. The Pakistani classrooms are places that promote retention over critical thinking and practical work, slowly burying creativity and innovation in students.¹⁰

According to the IZA Institute of Labor Economics¹¹ noted that the quality of curriculum and its delivery is such that students would not be taught to be curious and problem-solving, but just memorize facts, which would leave them ill-equipped to work in a modern economy and society. This conclusion is similar to the results of the ASER 2023 report¹², which has recorded that Grade 5 learners (technically enrolled and studying at school) are still not able to handle tasks that demand sequential thought, including reading a paragraph and answering questions of comprehension. The absence of logical thinking, which is a result of quality education, is lacking in a bad way, and the existing system is producing graduates without critical thinking skills.

Pillar III: Mathematical Ability Decay

Galileo Galilei claimed that *“the language of nature is mathematics. The universe cannot be read until we have learnt the language and become familiar with the characters in which it is written. It is written in mathematical language, and the letters are triangles, circles and other geometrical figures, without which means it is humanly impossible to comprehend a single word.”*¹³

Lack of mathematical understanding hinders comprehension of the universe



Mathematics is not just a school subject; it is the language of accuracy, the art of formal problem-solving, the surest indicator of the technological and economic development of a society. The sudden loss of mathematical ability in Pakistani students, as it has been recorded in various mass testing, is not only an educational crisis but also an economic first-order crisis.

According to ASER (2023),¹⁴ in rural Pakistan, over 70% of Grade 5 students were unable to address simple mathematical problems. Both boys and girls at the grade levels assessed could only pass their basic mathematics with 49 and 45%, respectively. These statistics are indicative of a well-established trend that has only deteriorated throughout the years to the extent that students are now on a path that

¹⁰ <https://www.thefridaytimes.com/23-Jan-2026/pakistan-s-schools-fail-build-thinkers-obedience-innovation>

¹¹ <https://docs.iza.org/pp76.pdf>

¹² <https://www.paradigmshift.com.pk/aser-2023/>

¹³ <https://www.criticalthinking.org/pages/critical-thinking-blog-2023/1637>

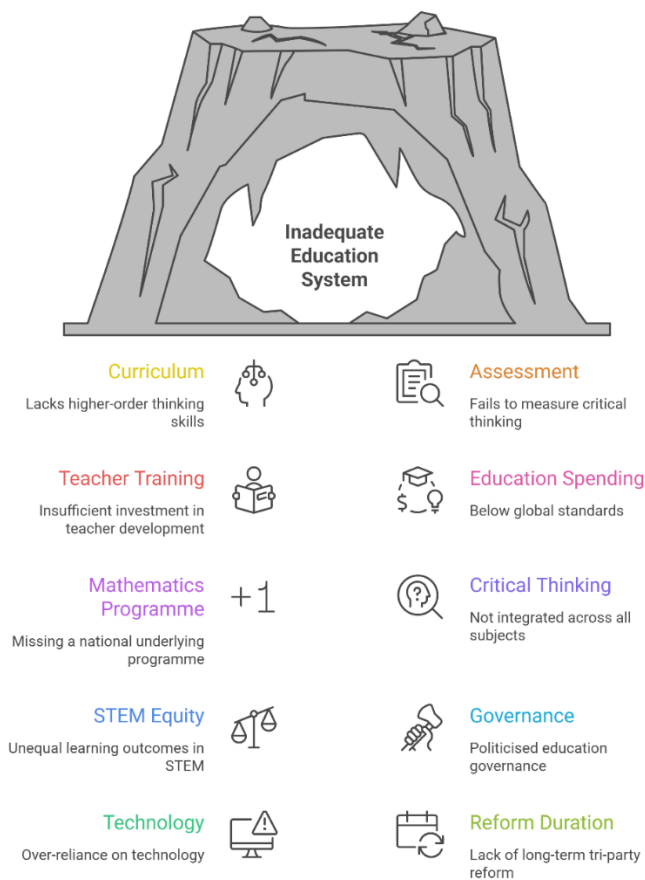
¹⁴ <https://www.paradigmshift.com.pk/aser-2023/>

renders any meaningful interaction with secondary and higher education all but unachievable. They also revealed that only 40% of the teachers working in the public school have subject-specific knowledge at a satisfactory level. The under-trained teachers, overcrowded classrooms, and an assessment culture not based on the value of procedure fluency produce conditions where mathematical learning cannot be meaningfully accomplished.

A nationwide study used a cross-sectional survey that evaluated the achievement of mathematics of students and classroom practices of teachers using rigorous assessments and observations¹⁵. The sample was divided into 303 teachers and 15,343 students who were chosen through multistage cluster random sampling in the whole of Pakistan. The results of the multiple regression analyses demonstrated significant predictors of student performance, which were the school system, teacher qualifications, pedagogical practices, instructional time, language of instruction, grade level, student age, and parental educational attainment. The study also identified the following as the critical predictors of poor mathematics performance: school system type, teacher qualification levels, and the quality of classroom pedagogical practice. Elementary mathematics teachers are the weakest trained and least supported in the whole system.

Policy Recommendations

The facts under each pillar point to the conclusion that structural but not cosmetic reform is needed. The policy recommendations below are provided as a combined framework that ought to be put into force alongside political goodwill.



¹⁵<https://www.tandfonline.com/doi/full/10.1080/19477503.2025.2475689?af=R#:~:text=Using%20a%20cross%2Dsectional%20survey,policy%2C%20practice%2C%20and%20research.>

1. Reform the national curriculum to incorporate higher-order thinking

The curriculum structures of Pakistan need to be restructured to clearly incorporate higher-order cognitive goals of Bloom: analysis, evaluation, and synthesis at each grade level. The existing focus on recollection needs to be substituted with learning goals that entail students doubting, speculating, arguing, and learning.

2. Transform the examination and assessment architecture

Board exams need to be reformed and made to test competence, but not recall. This demands that the introduction of open-ended, scenario-based, and multi-step questions in all the subject exams, especially mathematics and science, be considered. A national system based on competency-based assessment in accordance with the outcome of the reformed curriculum is to be created and tested in at least two provinces within three years. The HEC must also simultaneously redefine university entry standards to involve testing of critical thinking.

3. Increase investment in teacher training and certification

The success of any curriculum change is impossible without concomitant revolution in pedagogical competence. The government should provide compulsory, periodic teacher training programs based on inquiry-based teaching, the Socratic questioning method, and mathematics teaching.

4. Increase the education spending to global standards

The reduction of education spending to around 1% of GDP, which is recorded in the 2024-25 budget, is a policy failure and a violation of the constitution since Article 25-A of the constitution guarantees free and compulsory education. The federal government needs to pass a law that progressively increases the amount of money spent on education to the UNESCO minimum of 4 percent of the GDP in a span of five years.

5. Create a national underlying mathematics program

A national foundational mathematics program is now paramount. This program is to offer systematic evidence-based instructional assistance on the primary level, implement special mathematics-teachers' coaches in the districts with underperformance, and set Grade 3 and Grade 5 mathematical proficiency markers as non-negotiable promotion policy milestones.

6. Incorporate critical and logical thinking in students of all subjects

Critical and logical thinking should not be discussed as separate modules but rather be cross-curricular skills applied to all disciplines. The lesson planning frameworks are to demand that the teachers include at least one higher-order question, a group of reasoning tasks, and an activity on real-world application per class period. The teacher performance reviews that are currently entirely obsessed with syllabus cover should be reformulated to evaluate the cognitive quality of classroom teaching.

7. Establish STEM learning outcomes equity

Gender equity in STEM achievements protects the development of talent by making sure that the unequal opportunities do not cut off the lines of promising people and prove to be a more powerful source of innovation and a bridge to social mobility. When all learners are given an opportunity to master rigorous standards of STEM, we have a more heterogeneous and bigger group of problem-solvers and creators in society.

8. De-politicize education governance and provide an independent accountability

Political meddling in the appointment of teachers, curriculum development, and administration of schools has continued to be cited as a primary contributor to downward quality. The government should have an independent National Education Quality Commission, whose authority to do so is statutory, multi-party, and involving civil society to control the standard of the curriculum, administer national learning tests, and publicly release results.

9. Use technology for teaching

The digital learning programs have the potential to widen access to high-quality instruction in low-resource districts, although technology needs to be put in place to facilitate inquiry-based pedagogy, not instead of structural repair. The government can introduce AI-influenced feedback and digital problem-solving solutions to selected districts, basing its decisions. Scaling should be preceded by connectivity infrastructure and device access.

10. Create a long-term multi-party education reform

The most significant challenge towards sustained improvement has been the discontinuity in policy in Pakistan, whereby the new governments commonly overturn the education programs of the earlier governments. A constitutionally based national educational compact must be created involving all the major political parties, and thereby making them pledge to a 10-year education reform agenda that cuts across electoral periods.

Conclusion

The education system in Pakistan is not just performing poorly; it is, in fact, actively breeding graduates whose mental abilities are not as high as 21st century expectations require. As evidenced in this paper, the loss of critical thinking, the breakdown of logical thinking, and the degradation of mathematical skills are not accidental failures but are structural results of the system that is established to encourage remembering things, as opposed to reflecting.



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Main Campus

13 KM, Off Thokar Niaz Baig
Raiwind Road, Lahore-53700, Pakistan
Telephone: 042-38100156
www.bnu.edu.pk