

Editorial

Joint Editorial

Creative and Critical Thinking among Bangladeshi Medical & Health Researchers (2000–2025):

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Background

On the very occasion of launching our 1st journey towards publishing our medical journal, 'mediVision Journal of Medical Science (MVJMS)' from our decade-long successfully driven establishment 'Vision Eye Institute & Hospital (VEIH)', we plan to present the medical readers something new, something robust, something much pioneering. With this mission, we, all medical and ophthalmological researchers/scientists dedicatedly involved with the steady driven/plan of writing up this 'joint editorial' on creative and critical thinking among our Bangladeshi medical researchers/scientists based on a period of last two and half decades (2000–2025).

What does "Creative thinking" and "Critical thinking" really mean? Christopher P Dwyer has perfectly been shortened creative thinking and critical thinking as 'Creat T' and 'Cri T'. In fact, it remains like a dual engine of any scientifically aimed definitive progress. These are like two wings of any scientific issue towards achieving any/some targeted goal/s., while "Creative thinking" ('Creat T')³ defines as one's capability of generating something novel presented with productive hypothesis, on the other hand, "Critical thinking" ('CriT')³ remains scientifically organized

evaluation of evidence based assumptive explanations.¹ Psychologist Suparna Sengupta flawlessly illustrated about creative and critical thinking in figure 1.11

Now let us look back on the status of our "Creative thinking" and "Critical thinking" that we may have been practicing in BD over the span of last 2.5 decades. Admiringly, it's something like climate or nature's 'shifting and drifting' yielding a major socioeconomic transformation and development of higher-order cognitive skills among our researchers and scientists particularly in medical science of BD evidencing to have been faced a varied yet uneven pathways.²

Though critical thinking and creative thinking are often cited and promoted as important cognitive processes in personal, academic and professional settings, common misconceptualisation of both often leads to confusion for non-experts. With respect to the former, research indicates that critical thinking (hereon stylized as 'CriT') facilitates better judgment and decision making (Gambrell 2006), less dependence on cognitive bias and heuristic thinking (Facione and Facione 2001; McGuinness 2013) and a more complex understanding of target information (Dwyer et al. 2012; Halpern 2014), and enhances the likelihood of achieving better grades, employability and becoming more active citizens (Barton and McCully 2007; Holmes and Clizbe 1997; National Academy of sciences et al. 2005). Outcomes facilitated by creative thinking (hereon stylized as 'Creat T'), cognitive speaking, are those associated with cognitive flexibility, sensitivity to problems, idea fluency and novelty.³

1. Growth of Research in Bangladesh: Quantitative vs. Qualitative Dimensions

Bangladesh has experienced a rapid expansion in scientific research output, with publication growth estimated at approximately 21% annually, reaching nearly 18,000 scientific papers per year.⁴ This quantitative growth reflects increasing technical capacity and broader participation in global scientific publishing. Global databases indicate that

Thankfully yours, we remain-

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>82% of Bangladeshi publications are original research articles, particularly within clinical medicine, public health, and environmental sciences, appearing in internationally reputed journals.⁵ While this trend signals strengthening technical competence, it also suggests that creative risk taking, a key driver of innovation, remains structurally constrained.⁶

Despite rising output, this quantitative momentum has not translated into proportional qualitative depth. Much of current research remains incremental rather than disruptive. It indicates while productivity has increased, the conditions necessary for breakthrough innovation and robust critical inquiry are still limited.⁵⁻⁶

Creative Thinking and Critical Thinking

creative thinking generates ideas while critical thinking
evaluates and refines them
@suparnasengupta

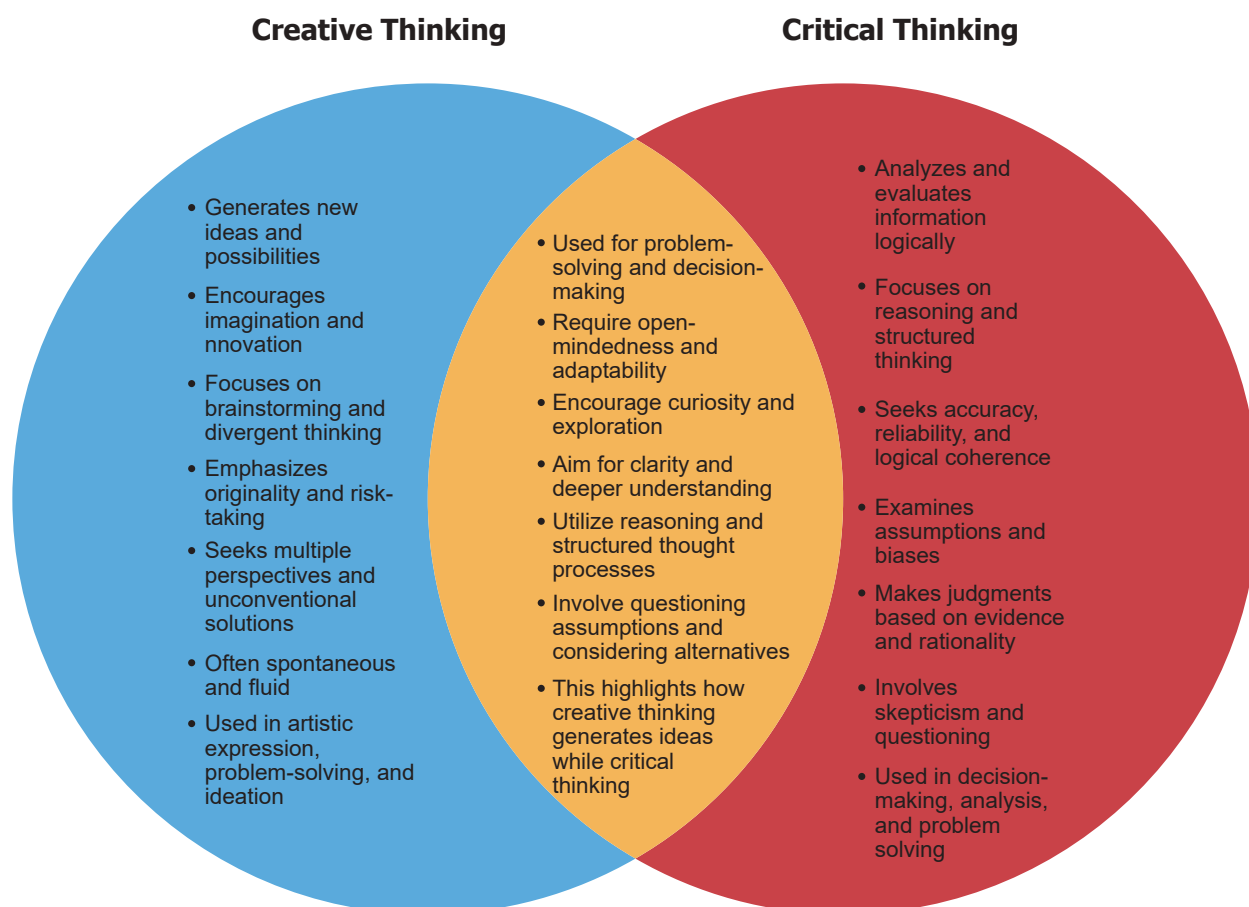


Figure 1: Creative thinking and critical thinking infographics by psychologist Suparna Sengupta.¹¹

2. Where Do We Lack in Bangladesh: Systemic Constraints and Innovation Barriers

On global benchmarks, Bangladesh continues to demonstrate structural weaknesses in its innovation ecosystem, ranking 106th out of 139 economies in the Global Innovation Index (GII) 2025. Persistent gaps are evident in human capital development, research quality, and institutional effectiveness, suggesting that research

expansion isn't yet supported by a sufficiently robust innovation infrastructure.⁶

A major underlying factor is the chronic underinvestment in research and development (R&D). National R&D expenditure remains at approximately 0.30% of GDP, substantially lower than regional & global counterparts.⁴⁻⁵ This deficit limits protected research time and discourages long term and interdisciplinary experimentation, both being

essential for creative scientific discovery. Thus, while technical capacity has improved, the conditions required to nurture creative and critical type of scientific thinking remain structurally constrained in Bangladesh.⁴

3. Our Education system and critical thinking

It is proved that critical thinking in any researcher/scientist is laid prior to entering into his/her work place (hospital, lab, research Centre, etc.). Most probably as history reveals BD education system emphasizes more on routine lesson learning (mostly memory Vs. inquiry-based learning). In a recent publication in BD J Med Educ, it becomes obvious that academic curriculum reforms in 2023 was aimed to

promote analytical reasoning but was partially implemented only due to gaps in regular training teacher missing/absenting but more serious was in teaching outcome assessment system. Alike several other reports and assessments in graduate research training was pin pointed on 3 issues: 1. Insufficient preparation, 2. Lack in research methodology and 3. Utilization of proper methodological critic.⁷

4. Practical Evidence from Medical Research in Bangladesh

Direct empirical evidence examining critical thinking within Bangladeshi clinical, epidemiological, and public health research remains limited. Most existing evidence focuses on medical education contexts, particularly academic performance and learning outcomes among undergraduate medical students.⁸ This pattern suggests that limitations in critical thinking originate early in professional training.

Similar concerns have been observed in nursing education, where recent assessments highlight inadequate integration of critical and analytical thinking within competency based training frameworks.⁹ These findings indicate that across health professions, systematic cultivation of critical thinking remains insufficiently institutionalized. Accordingly, senior medical researchers and educators must prioritize training future practitioners as critical thinkers from the earliest stages, including internship and supervised clinical training. Strengthening creative thinking alongside critical reasoning is essential for generating stakeholder driven, context appropriate solutions in both clinical medicine and public health.⁹

5. Conclusion and Way Forward

Bangladesh stands at a crucial transitional juncture in its scientific development. To move from quantity driven research output toward a quality/creativity driven scientific impact, sustained increases in RandD investment, reform of institutional incentive structures that reward originality, and protection of academic and editorial freedom are essential.

To follow, if not fulfilling UN's SDG goals in BD aiming towards 'Vision 2041', we must increase the quality of our creative thinking towards generating something anew, widened and critical yet prudent evidence-based evaluation in science in BD.¹⁰ The mediVision Journal of Medical and Health Sciences (mVJMHS) is committed to supporting this transformation by valuing methodological rigor, transparency, and originality as complementary pillars of scientific advancement.

References

1. Gómiz Aragón M, Aragón Méndez MM, Vieira RM, Tenreiro Vieira C, Oliva JM. Creative and critical thinking and modelling: Confluences and implications for science teaching. *Journal of Intelligence*. 2025;13(9):111. doi:10.3390/jintelligence13090111
2. Bangladesh Bureau of Statistics. Report on Research and Development (RandD) Survey 2022. Dhaka: Statistics and Informatics Division, Ministry of Planning; 2024.
3. Christopher P Dwyer, Deaglán Campbell, Niall Seery. An Evaluation of the Relationship Between Critical Thinking and Creative Thinking: Complementary Metacognitive Processes or Strange Bedfellows? *J Intell*. 2025 Feb 18;13(2):23. doi: 10.3390/jintelligence13020023
4. UNESCO. National SDG4 Strategic Framework for Bangladesh. Paris: UNESCO; 2022.
5. Nature Index. Bangladesh: Country/Territory Outputs (2024–2025). Berlin: Springer Nature; 2025.
6. World Intellectual Property Organization (WIPO). Global Innovation Index 2025: Bangladesh Country Profile. Geneva: WIPO; 2025.
7. Wiley. Guest Editor Guidelines – Editorials Written with Co-editors. Hoboken: John Wiley and Sons; 2024
8. Press Xpress. Boosting Bangladesh's Research Spending: A Path to Innovation and Growth. Dhk: Press Xpress; 2024 Jun-3.
9. Kabir MA, Alam KK, Talukder MHK, Das BK, Azim E, Hossain MS. Relation among critical thinking, peer learning, help seeking strategies and academic performance in undergraduate medical students of Bangladesh. *Bangladesh Journal of Medical Education*. 2026;17(1):34–43.
10. BBS, Rep on RandD Survey 2022 Min of Plan, 2024, UNESCO Nat SDG 4, UNESO 2022, The Daily Campus, Yet Trails India and Pakistan- The Daily Campus 2026 Feb 22)
11. Psychologist Suparna Sengupta, Creative thinking and critical thinking [Infographic]; [cited 2026 May 4]. Available from: URL-<https://www.instagram.com/p/DGUf8eMzBVf/>