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Original Article

The power of questions: Curiosity as the foundation of creativity in higher education

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Abstract

Curiosity is a fundamental driver of learning, discovery, and innovation. Through questioning, exploration, and experimentation, individuals construct knowledge and generate new ideas. However, a paradox exists in higher education: despite acquiring greater knowledge and technical expertise, many students show reduced willingness to ask questions, challenge assumptions, or engage in independent inquiry. This paper introduces the concept of the Curiosity Gap—the progressive decline in questioning behaviour and exploratory inquiry as students advance through formal education despite increasing cognitive maturity. Drawing on educational psychology, creativity studies, and innovation research, the paper analyses contributing factors such as examination-oriented learning, fear of failure, social conformity, teacher-centred pedagogies, and excessive specialization. It proposes conceptual models linking curiosity to innovation and offers recommendations for fostering inquiry-oriented environments. The discussion aligns with the objectives of India's National Education Policy (NEP) 2020 and underscores the importance of centring questioning in higher education.

Keywords: *Curiosity, Creativity, Innovation, Higher Education, Questioning Behaviour, Critical Thinking, Curiosity Gap, NEP 2020*

Introduction

Questions are central to human progress. Scientific discoveries, technological breakthroughs, entrepreneurial innovations, and social transformations often begin with simple inquiries: Why? How? or What if? Curiosity motivates individuals to explore the unknown, challenge assumptions, and seek deeper understanding. Educational philosophers and psychologists have long emphasised curiosity's role in learning. John Dewey viewed genuine education as rooted in inquiry, while creativity researchers regard it as a key precursor to innovation. Paradoxically, questioning behaviour often declines as students' progress through formal education. Young children display high curiosity, whereas college students frequently hesitate to seek clarification or pursue independent lines of inquiry.

This paper examines this phenomenon through the lens of the Curiosity Gap, defined as the progressive decline in questioning behaviour and exploratory inquiry observed as students advance in formal education despite growing knowledge and cognitive maturity.

Curiosity as the foundation of learning and creativity

Curiosity is the desire to acquire new knowledge, resolve uncertainty, and understand unfamiliar phenomena. According to Loewenstein (1994), it arises from perceived gaps between what one knows and what one wishes to know. Curiosity enhances engagement, persistence, and deep learning while serving as a critical precursor to creativity and innovation.

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Creative ideas rarely emerge spontaneously. Rather, they are often preceded by sustained observation, questioning, exploration, and discovery. Curiosity functions as a catalyst for these activities by encouraging individuals to investigate uncertainties, seek new knowledge, and explore alternative perspectives. Through this process, learners acquire insights that may subsequently contribute to creativity and innovation.

Evidence of the curiosity gap

Research indicates that young children exhibit high frequencies of spontaneous questioning. In contrast, secondary and higher education classrooms often show lower levels of student-initiated inquiry, with many students participating passively. In the Indian context, formal systems have been noted to transform active, curious learners into passive recipients of knowledge. This consistent decline points to a significant Curiosity Gap that extends beyond reduced questioning frequency to a broader erosion of exploratory thinking.

Causes of the decline in questioning behaviour

The decline stems not from diminished intellectual capacity but from educational, social, and structural factors.

1. Fear of failure Systems that penalise mistakes discourage students from revealing uncertainty through questions.

2. Fear of social evaluation Concerns about appearing uninformed in front of peers suppress intellectual risk-taking.

3. Examination-Oriented learning Prioritising correct answers over meaningful questions shifts focus away from inquiry.

4. Teacher-centred pedagogy Lecture-based instruction limits opportunities for student-led questioning.

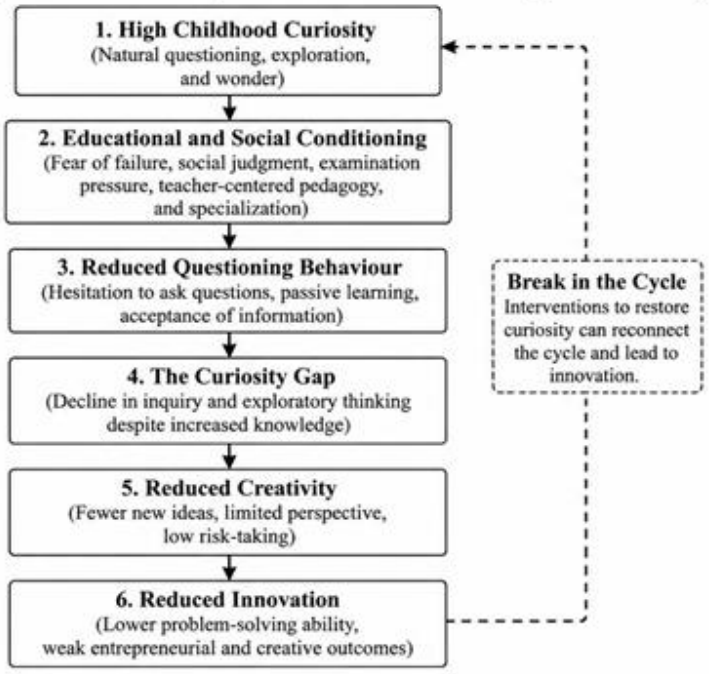
5. Excessive specialization Narrow disciplinary focus reduces interdisciplinary exploration and novel questions.

Curiosity, Creativity, and Innovation: A conceptual relationship

Curiosity and creativity exhibit a mutually reinforcing relationship. Curiosity motivates individuals to explore unfamiliar ideas, experiences, and perspectives. Through exploration, learners acquire diverse knowledge and experiences that increase the likelihood of forming novel connections between seemingly unrelated concepts. Such connections often serve as the basis for creative insights, which may subsequently lead to innovative solutions, products, or processes. Consequently, curiosity can be viewed as a foundational antecedent of creativity and innovation. Educational systems that suppress curiosity unconsciously limit creative potential.

Figure 1. The Curiosity Gap Model

(From High Childhood Curiosity to Reduced Innovation in Higher Education)



Note: The dashed arrow indicates that without intervention, the cycle does not return to high curiosity.

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Figure 1 presents the proposed Curiosity Cycle of Innovation. The model conceptualizes innovation as an iterative process beginning with curiosity and progressing through questioning, exploration, discovery, and the development of new understanding. Innovation generated through this process subsequently stimulates renewed curiosity, thereby creating a continuous cycle of learning and creative development. The model highlights the central role of questioning behaviour in sustaining innovation within higher education contexts.

Implications for higher education

To bridge the Curiosity Gap, institutions should implement the following:

1. **Inquiry-based learning**: Encourage students to formulate questions, not just answer them.
2. **Project-based learning**: Use real-world, ambiguous problems to stimulate natural inquiry.
3. **Assessment reform**: Reward exploration, originality, and question quality.
4. **Psychological safety**: Foster classrooms where uncertainty and challenge are welcomed.
5. **Interdisciplinary exposure**: Enable cross-disciplinary engagement to spark novel questions.

Relevance to NEP 2020

This approach directly supports India's National Education Policy (NEP) 2020, which calls for a shift from rote memorisation to critical thinking, multidisciplinary learning, and innovation. By addressing the Curiosity Gap, institutions can create inquiry-driven environments that produce graduates equipped for lifelong learning and national development in a knowledge economy.

Limitations and future research As a conceptual paper, this study relies on literature synthesis rather than primary data. Future empirical research should:

1. Measure curiosity and questioning levels across disciplines.
2. Examine links between questioning behaviour and creative/entrepreneurial outcomes.
3. Investigate institutional and cultural factors affecting inquiry.
4. Conduct longitudinal studies on curiosity changes during higher education.

Conclusion

Curiosity is a core driver of learning, critical thinking, and innovation. The Curiosity Gap reflects environmental conditioning rather than any inherent loss of ability. By shifting toward inquiry-centred education, higher education institutions can help students rediscover their natural questioning instincts. Cultivating curiosity must become a deliberate objective if creativity and innovation are to flourish as central outcomes of higher education.

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Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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