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EDITORIAL ANALYSIS

To Build, India Must First Discover: On a Scientific Culture

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To Build, India Must First Discover: On a Scientific Culture

 **The Indian Express** 12 June 2026 **GS3**

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INTERVIEW ANGLE

"India is becoming a manufacturing hub, but invents little of what it makes. What does it take to build a genuine culture of scientific discovery, not just assembly?"

Source: [Original editorial](#)  [The Indian Express](#)

 Every fact web-verified against primary sources **HOW**

WHY THIS MATTERS NOW

As India pursues **Viksit Bharat** and a manufacturing push, a sharper question surfaces: does it also build a culture of **discovery**? For an aspirant, this is a stimulating **GS3 (science and technology) lead**. The argument goes beyond research spending to **scientific culture**: India must invent, not just assemble, and that requires funding, freedom and a society that values **scientific temper**.

THE CRUX IN 60 WORDS

India increasingly **manufactures** but **discovers** little of what it makes. Long-term value and autonomy come from **inventing** technology, which needs adequate, stable **research funding**, academic freedom, strong universities, academia-industry links, and a culture of **scientific temper**. Treating frontier research as a luxury locks India into dependence. The reforms: fund, free and cultivate discovery, from the lab to the classroom.

THE ISSUE, DECODED

ELEMENT	WHAT IT IS	WHY IT MATTERS
Discovery vs manufacturing	Inventing vs assembling technology	Where value and autonomy lie
Research funding	R&D as a share of GDP	India's is low and unstable
Scientific temper	Curiosity, questioning, evidence	A constitutional duty and innovation's root
Academia-industry links	Campus-company collaboration	Weak in India

THE ANALYSIS: WHY A CULTURE OF DISCOVERY MATTERS

- 1 **Invention beats assembly.** The highest returns and autonomy flow to those who create technology.
- 2 **Funding is low and unstable.** Scientists chase grants and clearances rather than ideas.
- 3 **The ecosystem is thin.** Under-resourced universities and weak academia-industry links hold research back.
- 4 **Culture is the deepest layer.** A weak scientific temper limits curiosity-driven inquiry.

DATA AND INSTITUTIONS VAULT

India's gross expenditure on R&D (GERD) is well under **1% of GDP**, versus 2 to 4% in leading economies; private-sector share is low. **Institutions:** the **Anusandhan National Research Foundation (ANRF)**; the **Department of Science and Technology**; **CSIR, DBT, ICMR**. **Constitutional: scientific temper** is a Fundamental Duty under **Article 51A(h)**. **Concepts:** basic vs applied research; the **innovation ecosystem**; the value chain; brain drain versus brain gain. **Linkage:** **Viksit Bharat**, self-reliance, the knowledge economy and the demographic dividend.

THE DEBATE

Argument for application: A developing country should apply existing technology at scale; frontier research is a luxury for richer nations.

Argument for discovery: Applying without inventing locks India into dependence and the lower rungs of the value chain; autonomy requires a research culture.

The balanced verdict: Application and discovery are not opposites, but India has leaned too far toward the former. The answer is to **build the culture and ecosystem of discovery**, funding, freedom, institutions and scientific temper, so that India creates more of what it uses.

HOW TO THINK ABOUT THIS (TRANSFERABLE SKILL)

A weak answer focuses only on money for research. The strong answer sees that funding is necessary but not sufficient, and that discovery needs a culture, freedom, stable careers, curiosity and scientific temper, as much as cash. The move is from inputs to ecosystem. The same lens applies to entrepreneurship, the arts and any field where creativity is the output.

DIAGRAM-IN-WORDS

India manufactures (assembles) but discovers little. The foundations missing: low/unstable R&D funding + bureaucratic constraints + weak universities + thin academia-industry links + weak scientific temper. The reform: fund + free (autonomy) + strengthen institutions + cultivate scientific temper -> a culture of discovery -> invention, not just assembly.

THE WAY FORWARD

- 1 **Raise and stabilise research funding** toward global benchmarks.
- 2 **Give scientists autonomy, stable careers and freedom from red tape.**
- 3 **Strengthen universities and academia-industry links.**
- 4 **Nurture scientific temper** from school onwards, as a constitutional value.

THE TAKEAWAY BOX

“A developed India requires a culture of discovery, not only a manufacturing base.” Examine the institutional and cultural reforms needed in Indian science. (250 words)

“A country is defined not only by what it manufactures but by what it discovers; to make what the world needs, India must first invent it.”

gross expenditure on R&D (GERD, <1% of GDP) · ANRF · scientific temper (Article 51A(h)) · innovation ecosystem · basic vs applied research.

Is curiosity-driven research a luxury for a developing country, or a foundation of its future?

Connects to GS3 PYQs on science-and-technology policy, indigenisation and the research ecosystem; a probable question is the discovery-versus-manufacturing framing above.

static GS3 on science-and-technology policy and the knowledge economy; the broader theme of self-reliance and Viksit Bharat.

Sources: Indian Express, Department of Science and Technology, ANRF

Source: To Build, India Must First Discover: On a Scientific Culture — Ujyari.com | Free UPSC & State PCS Editorial Analysis

● KEY ARGUMENTS AT A GLANCE

India’s aspiration to be a developed nation requires not just a manufacturing push but a genuine culture of discovery and scientific temper, which depends on adequate and stable research funding, academic freedom, strong institutions and a society that values curiosity-driven science.

✓ SUPPORTING

- Manufacturing assembles and applies technology, but long-term value and autonomy come from discovering and owning it.
- India’s research ecosystem faces bottlenecks, low and unstable funding, bureaucratic constraints, weak academia-industry links and a thin research culture.

- A scientific temper, curiosity, questioning and evidence, is both a constitutional value and the foundation of innovation.

COUNTER

Some argue that for a developing country, applying existing technology at scale is the pragmatic priority, and frontier research is a luxury.

WAY FORWARD

Raise and stabilise research funding, give scientists autonomy and stable careers, strengthen universities and academia-industry links, reform science administration, and nurture scientific temper from school onwards.

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MAINS ANSWER FRAMEWORK

QUESTION

"A developed India requires a culture of discovery, not only a manufacturing base." Examine the institutional and cultural reforms needed in Indian science. (250 words)

INTRODUCTION

India is becoming a workshop of the world, assembling phones, vehicles and more. But a country is defined not only by what it manufactures; in the long run, it is defined by what it discovers.

BODY

The distinction is decisive. Manufacturing creates jobs and value, but the highest returns and the greatest strategic autonomy flow to those who invent the technologies others assemble.

To move up that chain, India needs more than factories; it needs a culture of discovery. That culture rests on several foundations India has under-built.

Research funding is low as a share of GDP and, just as damaging, unstable and bureaucratically constrained, so scientists spend energy chasing grants and clearances rather than ideas. Academic careers struggle to compete with industry, thinning the talent pipeline.

Universities, where curiosity-driven research should flourish, are often under-resourced and over-regulated, and links between academia and industry are weak. Beneath all this lies a cultural question: the strength of scientific temper, the habit of curiosity, questioning and evidence, which the Constitution itself lists as a duty.

The pragmatic counter-argument, that a developing country should focus on applying technology at scale and leave frontier research to the rich, is short-sighted: it locks India into dependence and the lower rungs of the value chain. The reforms required are clear: raise and stabilise research funding; give scientists autonomy, stable careers and freedom from red tape; strengthen universities and their ties to industry; reform the administration of science; and nurture scientific temper from the classroom up. Discovery cannot be ordered into being, but it can be funded, freed and cultivated.

CONCLUSION

A developed India will be built not only in its factories but in its laboratories and classrooms. To make what the world needs, India must first discover, and that begins with valuing the search itself.

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